

Worldwide Construction Equipment Division

1998

John Deere Dubuque Works

The year in review



Customer Focused - Process Driven

From the General Manager



Max Guinn
General Manager,
John Deere Dubuque Works

*Congratulations on
another year of record
performance at the
Dubuque Works!
Outstanding results in
the areas of safety,
quality, cost reduction,
and production output
drove a 55% increase in
profitability when
compared to the
previous record that was
established in 1997.*

The best way to begin to analyze 1998 is to look at our performance against the *vital few* improvement goals established at the beginning of the year. The first one related to successful introduction of H-Series Crawlers. During the middle of the year we challenged the H-Series Team with a goal to reduce the total machine cost by 10%. The team met the challenge. The cost reduction plans yielded design and process changes that required us to extend quality planning and test activities. Completion of these activities pushed machine introduction to early 1999. This was absolutely the right thing to do as far as I'm concerned and the H-Series Team gets an A+ for their activities in '98. Now our challenge is to retain the cost reduction while setting a new benchmark for new product quality with the very first machines shipped. We are positioned well to meet these challenges.

We took on the challenge of a 15% improvement in income based on constant volume from 1997. This one is a bit complicated to measure given that our volumes were anything but constant during the year. However, our cost reduction reporting mechanisms show a 14% improvement during the course of the year. I consider this excellent since we actually accelerated some spending into 1998 that was previously planned for 1999 and beyond. In summary....our financial results were great. The 7.5% return on sales we produced positions us well to achieve the longer term goal of 4.5% return on sales over a complete business cycle.

Another of our *vital few* pertained to performance in the service parts area. The specific goal was 99% fill on all Critical Code 11 and 12 parts. We beat this one handily with a 99.4% performance. Overall service parts fill was the best in history with a fill rate for all parts of just under 99%. Great job!

The last of the *vital few* fell into the human resource area. First was a goal of 10% reduction in OSHA recordable and

first aid incident rates. We didn't make this one, but we did manage a slight reduction of 1%. I'm not satisfied with this result and you shouldn't be either. As 1999 goals roll out, you'll see that we intend to continue driving for reductions in injury rates and severity. Our overall safety results are outstanding today, but they can be better!

The second goal in the human resource area was to integrate wage and salaried workforce models with business plans to yield replenishment strategies. I'm pleased to report that we enjoyed great success here. We now have wage and salaried models that integrate anticipated attrition with business plans that define our overall requirement for people in the future. Techniques that started here are now being expanded to the division level in order to more effectively include all of the requirements of the business. Continuing our investment in replenishment of the workforce is clearly our biggest challenge and opportunity at this time. At present we are benefiting greatly from a very experienced, professional, and committed group of employees throughout the factory. Successful renewal of this resource is the key to continuing our current success into the future.

There are many other successes and efforts in the organization that are deserving of recognition here. Unfortunately I can't cover them all. You know what they are and you should take pride in those accomplishments. Results like these are key to our ability to continue to draw investment into the factory to improve the business. During 1998 we installed two new paint systems, expanded capacities for ETC, and made significant progress in H-Series Crawler development. During 1999 we'll finish ETC and the H-Series Crawler and we'll begin to invest heavily in the next backhoe update and the addition of another crawler model. During all this we intend to continue to invest heavily in people so that the human capability and capacity in the organization is maintained at the world class levels that we enjoy today.

Bottom line....1998 was a great year! Thanks for your contribution.

Best regards,

Mat



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**John Deere Dubuque Works
1998 - The Year in Review**

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**From the editor:
Dave Palmer**

It was time for a change...

The first issue of the *Dubuque Works Weekly Special Year End Employee Report* was published in 1993. It was a six page, tabloid style newsletter. In 1994 the publication was expanded to eight pages. In 1996 a special insert was included to highlight the introduction of E-Series Backhoes.

The tabloid format served us well in the past. Today, however, employees and retirees desire more information about our activities and business. This interest in additional information was one of the findings of the 1998 Employee Survey. Hence, the new format for the 1998 annual review. It provides more space to showcase activities that have lead to another successful year and the opportunity to discuss projects that will ensure a bright future for John Deere Dubuque Works.

I hope you enjoy both the new format and contents of the 1998 year end review.

Dave Palmer

The Financial View



A Financial Success Story

By Kelan Manning,
Manager, Accounting

1998 was a truly outstanding year! After tax profit as a percent of sales (ROS) was 4.8%, shattering the previous record of 3.8% set in 1997, as well as topping the initial goal of 4.5%. Dubuque has now been profitable for six years in a row!

What is financial success? Most people would agree that for a business to be successful it must make a profit. But just how much of a profit is sometimes unclear. Simply stated, a business is financially successful when it generates a profit that is large enough to attract investors. Investors provide additional capital that can be used by the business to earn even more profits...and so on. Thanks to everyone at the Dubuque Works, we are enjoying financial success. We are making profits and, as a result, investments are being made in our business.

There are several major reasons for our excellent financial performance in 1998:

- Strong demand for our products pushed production volumes to record levels (15% higher than in 1997).
- Despite producing at higher levels, our operating expenses were 2% lower than in 1997, after adjusting for volume.
- Strong quality focus kept down costs which result from poor quality (PIP's, warranty, scrap, etc.).

Because of our excellent financial performance, significant investments are being made in our business. During 1998 capital expenditures were at their highest level in many years. These investments will help assure our future as we continue to pursue profitable growth and business improvements. Some of the larger investments made in 1998 include:

- ✓ Investment in two new paint systems for Backhoe and Crawler operations.
- ✓ Investments to support Estimate to Cash.
- ✓ H-Series crawler investment.
- ✓ Investments in Information Technology and Product Engineering.

Financial success doesn't just happen by itself. It requires the collective efforts of many dedicated and talented employees — the kind of employees we have at John Deere Dubuque Works. It requires focusing on our customer and working together with our suppliers. Congratulations to everyone working in our business for their role in our financial success.

After-tax Percent Return on Sales

	Goal	Actual
1993	---	0.1
1994	1.6	1.9
1995	1.8	3.1
1996	1.8	2.6
1997	2.9	3.8
1998	4.5	4.8

Backfilling in Kodiak, Alaska



This 450C Crawler was spotted in Kodiak, Alaska last July by *Year in Review* editor Dave Palmer. Jeff Spencer was operating it to backfill rock near Women's Bay behind him. The bay was a Restricted Naval Defensive Sea Area and Airspace Reservation during World War II.

450C Crawler production ended in 1983. Jeff commented, "This crawler is an old one, but it keeps on going and going!"

Standing behind the crawler is "Scoop" Fredrickson. "I grew up on a ranch in Idaho," said Scoop. "My dad always owned John Deere equipment. One time when it was time to buy, however, he thought John Deere had gotten too expensive. So this time, he bought a Massey Ferguson. The tractor had just 167 hours on it and he took it back to the dealer and bought another John Deere!"

Were you there?

The centerpiece for this employee appreciation picnic was a balloon-covered 310SE Backhoe Loader. Employees and their families gathered at Swiss Valley in August for conversation and fun. Appetites of all ages were satisfied with barbecued burgers, brats and sweet, sticky ice cream. Appetites for winning prizes were also satisfied with drawings for prizes ranging from an overnight stay at the Radisson on John Deere



Commons in Moline to a portable CD player for the teens. Of course no picnic would be complete without bugs, so edible gummy bugs and other goodies were provided for the younger and not so young picnickers.



6,304 Pork Chops!

That's a lot of chops! A two-day Thanks-To-You employee lunch was held in October to celebrate safety, quality and profit performance. Other key ingredients included:

Potato salad	840 pounds
Beans	540 pounds
Chips	2,100 bags
Cake	2,400 slices
Beverages	3,846



Great Safety Performance

The Backhoe Division reduced all Combined Safety Incidents by 33% over 1997 performance. A fabulous accomplishment! The last Lost Time Injury for the division was back in January 1995. Keep the safety records coming!

Cab Line Doesn't Skip A Beat

Last April employees on the Department 100 cab line put in a normal workday assembling 45.3 cabs. At the end of that day, several employees stayed over and began the task of moving equipment from this assembly line in I-Building to its new location in W-5. Fork trucks and trains were lined up and employees began hauling equipment. As they worked with our utility people and outside contractors to move things in place, the plan was to "not skip a beat."

The next day was a non-production day, so the department came in and continued where they had left off the night before.

Plant engineering had done a good job of laying out

the area. As work areas were put into place, employees identified additional needs and made changes "on the spot," from additional air lines to electrical outlets. Material-in-process had to be moved to a smaller area and be ready for the next production day.

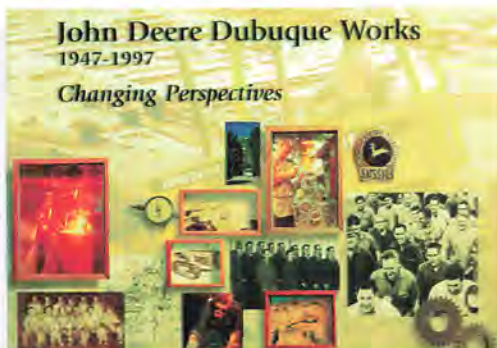
It happened! 45.3 cabs rolled off the line without skipping a beat. The distance the line moved was nearly half a mile!

After the move, a pizza party was held to celebrate the teamwork and coordinated efforts of everyone to make this move so smooth. Max Guinn and Steve Korrekt visited employees on the line and congratulated everyone on a job well done.

Best in Category

The John Deere Dubuque Works' 50th Anniversary book, "Changing Perspectives" received an Award of Excellence from the Northeast

Iowa Chapter of Women in Communications at their annual Excellent Performance in Communications (EPIC) awards banquet held at the University of Northern Iowa. The book was cited as an outstanding special project in the Public Relations category of the statewide competition. Recognized for their contributions on the project were: Faith Meyer, author; Beth LaVelle, designer; and 50th



Anniversary coordinator, Linda McAllister.

The Excellent Performance in Communications awards competition started 16 years ago. It is the only statewide competition that honors communicators in all fields - public relations, advertising, broadcast, newspapers, photography, etc. The book received an Award of Excellence (best in the category) in the Public Relations category for special projects.

Positive Visions Contest

John Deere Dubuque Works along with other local businesses (DuTrac Community Credit Union, Get Smart Design and BFI) co-sponsored the Positive Visions Earth Day Environmental Awareness Poster Contest in April. The contest attracted more than 300 students from local



junior high and high Schools. Pictured with the contest winners is Roger Wilming, chairperson of our Environmental Action Team (E.A.T.).

If a Crane Won't Do

It took a helicopter to position the exhaust stacks on the roof for the new backhoe paint system. A crane wouldn't extend deep enough onto the roof, so a chopper was the tool of choice. It completed the work on a September weekend.



50th Anniversary Video



The video made in 1997 for the John Deere Dubuque Works 50th anniversary has become an award

winner! The video was produced to document the history of the Dubuque Works and celebrate both the past and present.

Employees on the team that worked on the video were Keith Berning, Vickie Dolter, Daria Jerauld, Linda McAllister and Dave Neises.

Timothy Kane Productions in Davenport, Iowa produced the 14 minute film. They also entered it in the Telly Award competition. The competition was founded in 1980 to recognize outstanding commercials, film and video productions. The 50th Anniversary video won a Silver Award, the Telly highest honor, in the Motivational category.

The video also won first place in the Internal Communications category at the Iowa Motion Picture Academy Awards held last May in Des Moines!

Junior Achievement

This year's Junior Achievement advisory team from John Deere Dubuque Works consisted of Amy DeWeerd, John Pasui, Michele Pasui, Brian Proeber, Chris Rampton and Judy Wolf. They assisted students from three area high schools in starting the

S.P.I.C.E Company (Students Participating in Corporate Education) and producing products. At the conclusion of the 21 week business cycle, the



Keri Hansen, J.A. Vice President of Production (holding award) presented the Production Company of the Year Award to S.P.I.C.E. Company advisors (l. to r.) John Pasui, Judy Wolf, Amy DeWeerd, Michele Pasui, Chris Rampton and Steve Wohlwend.

S.P.I.C.E. company was recognized as Production Company of the Year. The company also had great representation in several other Junior Achievement award categories.

*As a **process driven** organization,
we look for improvements that add
value to our business. In 1998 an
improvement was made to the Expense
Stores System that saves \$183,000 a year!*

An examination of our Expense Stores System revealed a significant improvement opportunity for safety equipment procurement. The existing method took a lot of time and manpower, and was expensive. In several instances, procurement was actually more expensive than the items themselves! The solution was a “keep fill” process that is great for the user and saves \$183,000 each year.

"We knew we had to offer materials people needed, have them available and easy to obtain," said Larry Pape, Facility Services supervisor. "With keep fill, safety materials will no longer be stored in the main crib. They will be close to the user in designated areas throughout the factory."

Each week, the supplier checks the areas and restocks safety inventory. The change reduces invoices from 1,000 per year to just one a month! In the future, the keep fill process will be expanded to include other suitable items, usually those worth under \$100. Possible materials include electrical and plumbing items, perishable

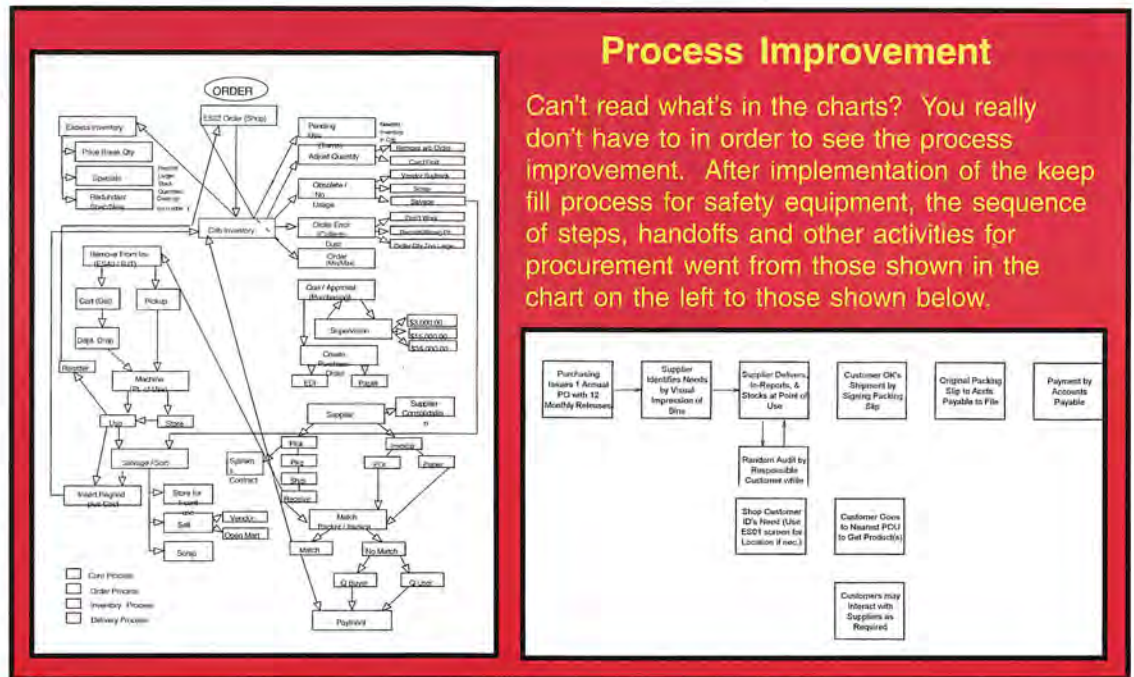
The change reduces invoices from 1,000 per year to just one a month!

tools, chemicals, etc. Items not on a keep fill system will continue to be ordered on request through the Expense Stores XTXES22 system.

This improvement, and the resulting \$183,000 annual savings, is a striking example of the importance of process improvement.

According to Pape, "The Davenport Works has used a keep fill system for over a year, and it's doing extremely

well. Usage went up at first, but as people found that items were always stocked, they realized it wasn't necessary to hoard them. Other benefits include: no K- numbers to remember, no computer systems to know, and no department accounts to worry about. Not only did we improve the process and make it more cost efficient, we have a system that will provide more satisfaction to the customer!"



Customer Focused - Process Driven

For twenty-five years the faces of the organization were about as constant as the yellow paint on all the products produced at Dubuque. Some faces may have gone away, but it was a rare day indeed when a new face appeared in the organization. For twenty-five years you could just say “across the street” or “on Michigan Avenue” or “up on the hill,” and everyone knew your exact meaning. You didn’t have to point to the spot where there once was a foundry or an extra water tower. That knowledge was part of the culture. Now that has changed and many new faces are on board. They will carry on where their fathers and relatives and neighbors have begun to leave off. With these new faces come new ideas, new skills and new enthusiasm. These new faces represent the future of John Deere Dubuque Works!

N E W



Rob Peterman
Hired - August 1997
Utilities Mechanic

“There’s always plenty to do and always something to learn. People are really helpful and very safety conscious...if something isn’t safe, they speak up and won’t let it go. I like the way everyone watches out for each other.”

Rob spent eight years in the Navy as a nuclear electrician. He is continuing his education at Clarke College.



Mark Riegler
Hired - January 1998
Welder

“I went through the Weld Certification Training Program with Bob Ward as my instructor. I feel the training really helped me, and Bob was an excellent instructor. He knows his welding and was a big help to me with weld sizes and angles. I’m impressed with the availability of things when I need them plus I can always get a hold of someone if I have a problem. I like the cleanliness of the place...it’s bright and well ventilated.”

Mark attended NICC for his initial weld training. He is the son of Department 162 assembler Bruce Riegler.

FACES



Robin Doubleday
Hired - September 1997
Engineer

"When I first came here there wasn't a new employee orientation program. So I and other new hires suggested they have one. THEY LISTENED! I went through the orientation and found it to be what we had asked for. I went for months not knowing I could dial in on an 800 number to check my voice mail. People don't always think to tell you about things like that. I think it might be a good idea to have something after you've been here for awhile...like a refresher. There's a lot of information a person can get from the intranet. There are things that I would prefer to find out myself rather than ask someone...maybe I'm thinking of taking a class and don't really care to have everyone know it. I can go to the intranet and see what's being offered. Availability of information online is fantastic."



Jinfei Wang
Hired - June 1997
Information Technical Analyst

"I find the work very challenging and that's why I do love my job. I found the orientation a very good way to learn about the Company. New projects are also good as they expose me to more people and ideas and help me grow as an employee. Sources of help for me have been the people I work around and also JD-ONLINE. There are many good tools to use here for resources."

One surprise I experienced at work happened last October when I turned 30 years old. I was only here for a short time and the people I work with surprised me by decorating my desk with balloons and signs and brought treats. It meant so much to me because I had no family or friends here. It warmed my heart."

Jinfei's husband, Wei Du, is a Mechanical Engineer in the Test and Evaluation group.



Vaughn White
Hired - June 1998
Electrician

"It's always sort of scary starting a new job, in a new place, with new people. You can't help but feel apprehensive, but I found out right away that people are more than willing to help you out, show you the ropes and watch out for you. Safety is a real big thing to everyone. People look out for each other. If something isn't safe they tell you to stop and do what you have to do to make it safe, then you proceed. I also like the variety of electrical work I can do. After my experience as being one of the new kids on the block, I'd tell any person coming in, don't get up-tight... people will accept you and do what they can to help!"

Vaughn received his Associated Degree from Southwest Technical College. He has taken courses at the University of Wisconsin - Platteville and plans on continuing his education by making use of the John Deere Tuition Aid Plan. Vaughn's brother Marty was also hired recently and is a supervisor in the Engine Division.



This is the *Rum Pointer*, a public ferry boat in Grand Cayman. Propulsion and electrical power are provided by John Deere marine engines.

Grand Cayman

& Deere M

When Ken Arensdorf set out on an island vacation last March, his thoughts centered on the sun, the beach and the surf. But shortly after he arrived on Grand Cayman Island, a local newspaper article caught his attention. Ken works in Machine Maintenance in the Engine Division and the article was about a boat that was fitted with John Deere marine engines.

Ken toured the island, found the boat and decided to take a peek. He talked the boat captain into a tour and discovered four John Deere marine engines. Two for propulsion and two for electrical power.

"Ironically," says Ken, "I was on another dive boat the following day and we became stranded. The engine failed and we had to be towed to shore. I wish that boat had been powered with John Deere engines!"



Ken Arensdorf has vacationed and snorkeled in the Caribbean for several years. Two years ago, his daughter talked him into scuba diving. On his most recent trip to Grand Cayman Island, Ken discovered John Deere marine engines.



The captain of the *Rum Pointer* didn't speak much English, but he did succeed in talking Ken Arensdorf out of his John Deere **PowerTech** hat! Following that transaction, he was eager to give Ken a tour of the boat.

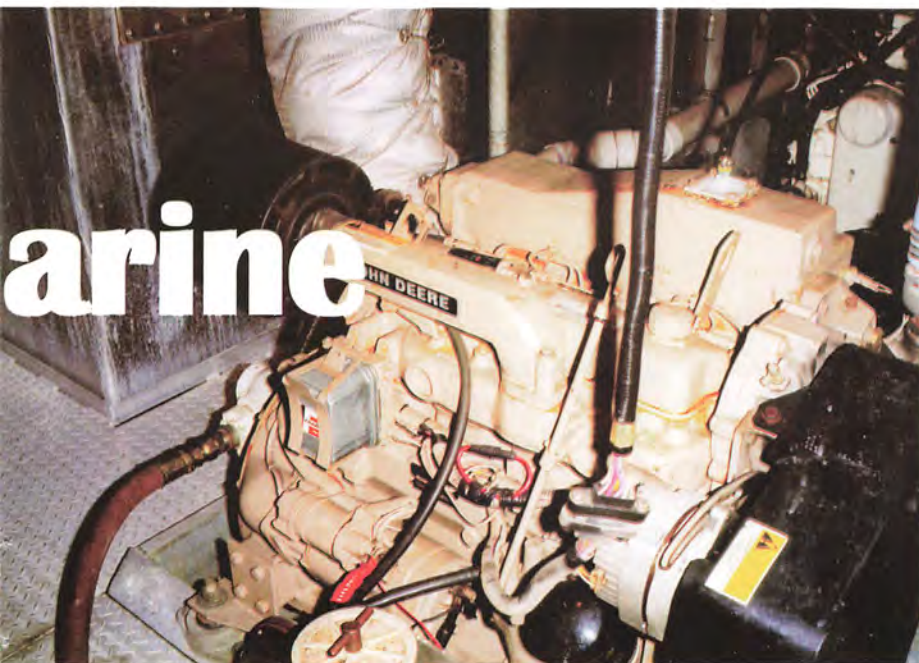


John Deere **PowerTech** engines are used in both agricultural and construction equipment.

They also provide power for a wide variety of other OEM (Original Equipment Manufacturer) applications.

Nearly 60% of the 250 plus engines built daily at Dubuque provide power in non-Deere products. Some of the many applications where **PowerTech** engines that are built at Dubuque or other Deere facilities are used include:

- Commercial Generators
- Industrial Sweepers
- Agricultural Pickers
- Air Compressors
- Irrigation Pumps
- Ground Support at Airports
- Forestry Equipment
- Stationary Engines
- Marine Applications
- Buses



Electrical power for the *Rum Pointer* is provided by two of these Dubuque produced 300 Series four cylinder marine engines. They are frequently used in gen-sets and feature an extra large exhaust manifold. It encloses exhaust gases in a water jacket to help keep heat from escaping into the surrounding area.

Take a look at all these performance records set by Engine Operations in FY 1998!

Q

uality of the Workplace

- January 23 - Engine Machining and Maintenance reaches 2,000,000 hours without a lost time injury.
- April 30 - Blockline operates six months without a safety incident.
- October 31 - Department 91, Engine Paint, operates 23 months without a safety incident (December 1996 through October 1998).

Q

uality of the Product

- October 31 - Department 77, Connecting Rod Machining, operates 28 months with zero defects on their monthly five piece dimensional audits (July 1996 - October 1998)

Q

uality of the Business

- April 27 - Engine Assembly produces 294 engines in a 9.5 hour day.
- July - Production of 4 millionth Deere Power Systems Group engine.
- October - Department 77, Connecting Rod Machining, averages producing 565 rods/day for week ending October 4.
- October - Production of 6068 natural gas engines began.
- October - Department 70, Cylinder Head Machining, averages producing 280 heads/day for week ending October 18.
- October 31 - Reduced average engine cost by 5.5 %.
- October 31 - Engine Operations produces 56,352 engines.
- October 31 - These production departments produced record component quantities for Dubuque assembly and interfactory customers.
 - ✓ Dept. 70 - Cylinder heads 66,800
 - ✓ Dept. 71 - Cylinder blocks 60,700
 - ✓ Dept. 74 - Crankshafts 56,700
 - ✓ Dept. 77 - Connecting rods 129,700

These performance records are the result of the effort and cooperation of all Engine Operations' personnel along with the excellent support of the entire factory!

Ambassadors

Of Goodwill and Knowledge

These gentlemen put our best foot forward!

One of the first persons a visitor to our facility meets is a Dubuque Works Tour Ambassador. They have the ability to answer almost any question about the Dubuque Works.



Harlan Doty has been an Ambassador for four years. Prior to that, he worked as a machinist for 34 years. "What I like best about being an Ambassador is meeting the variety of people we host and showing them what a world-class organization we have," says Harlan!

Tour Ambassadors conduct around 600 tours a year. They show our facility to over 5,000 people from every state in the nation and many countries around the world. According to the ambassadors, a highlight of every visit is the ability to watch and talk to the people who build our equipment.

Because we are a worldwide organization, our visitors speak many languages.

Several of our employees serve as interpreters. Our Tour Ambassadors have a list of 25 interpreters within our facility who are ready at almost a moments notice to join a tour. The list of languages they translate includes:

- Chinese ■ French ■ German ■ Hindi (India)
- Kinyarwanda (Rowanda) ■ Hungarian
- Japanese ■ Oriya (India) ■ Romanian
- Sanskrit (India) ■ Spanish
- Urdu (Pakistan)
- Vietnamese

Tour Ambassadors are among a long list of hard working people responsible for the success of the River City Rallye Fly-in. They proudly conducted tours for 4,300 Fly-in customers and dealers this year!

The Rallye consisted of 31 three-day visits that began January 11 and ended on March 13.



"Based on overwhelming success, our dealers have requested that we hold another Fly-In for the year 2000...and yes, we have already begun planning for another success!"

Max Guinn

Dubuque Works General Manager

5 Five Supply Management processes we use to maintain our *competitive edge*

1 Achieving Excellence

A strategy for world class supplier relationships

Achieving Excellence is a corporate-wide supplier strategy. It provides our supply base with a common language for communication with John Deere. As an enterprise, John Deere factories have many common suppliers. Now, John Deere Dubuque Works can benefit from Achieving Excellence data on suppliers for Waterloo, Horicon, Ottumwa, Davenport, Harvester, etc.



Information about Achieving Excellence is on-line at <http://devl.90.deere.com/suppmgmt/smss/jdsupnet/ae/index1.htm>. The data is current and easily accessible. A twenty-five minute video has also been produced that captures the spirit of John Deere and the Achieving Excellence process. The power of technology will help us Achieve Excellence!

2 Supplier Development

Providing the resources and tools to assist a supplier in the identification and elimination of waste and process inefficiencies

Supplier Development can assist a supplier in improving quality, delivery, lead-times, cycle times, process flow, cost reduction and other areas as identified by John Deere and the supplier. Supplier Development personnel have diverse manufacturing backgrounds and use various tools and techniques like process mapping, root cause analysis, mistake proofing, computer simulation, and brainstorming sessions, among others, to assist suppliers. Tools and processes are individually tailored for specific suppliers. Supplier Development offers either long term project team focused assistance for complex circumstances or faster (one week or less) team focused assistance for more specific situations.

3 Total Cost

A way of looking at all the factors that influence cost. It goes beyond the traditional cost breakdown of material, labor and overheads.

Total Cost identifies many opportunities for cost reduction. JDCrop (John Deere Cost Reduction Opportunities), for example, is a program that challenges suppliers to provide cost reduction ideas on an on-going basis. The goal is to utilize JDCrop with all Achieving Excellence suppliers. Other activities, like Value Improvement, urge us to look at our customers and evaluate whether we are giving them the best *Genuine Value*. This is based on available options and an analysis of what fits into their equipment at the most cost effective price. Supplier Development and cost management activities support our goals to manage total cost.

4 Electronic Commerce

Electronic Commerce is an enabling element of a well-developed Supply Chain Management process

E-Commerce makes use of several new electronic tools to help integrate the business processes of Deere & Company with those of our suppliers. Some of the new electronic tools include:

- The Internet
- Intranets
- Teleconferencing
- Videoconferencing
- NetMeeting
- Electronic Data Exchange (EDX)

With NetMeeting, for example, an eight hour Failure Mode Effects Analysis (FMEA) can be accomplished right at our work stations. And it can be done with the same quality as being there! Without NetMeeting, the FMEA could entail an eight hour drive to a supplier location to perform the analysis, then the drive back. NetMeeting is easily downloaded at no charge from Microsoft. A PC, modem and access to the Internet is all that's needed. NetMeeting is being used with several pilot suppliers.


5 Supply Chain Integration

A multi-tiered collaboration of the supply chain for all phases of the Product Delivery and Order Fulfillment Processes

Supply Chain Integration is accomplished through the co-ownership of processes and project objectives between John Deere and our supply chain. To make it effective, metrics and appropriate resources are utilized. The **supply chain** varies from the **supply base**. Traditionally, the supply base was thought to be our first level suppliers (suppliers who invoice us and are paid by us for parts, assemblies and services). The supply chain, on the other hand, refers to that first level or tier, and their suppliers or tier two, and so on.

Supply Chain Integration is now being offered as a class called "Integrating the Supply Chain into John Deere's Product Delivery Process." The class has been taught in several mid-west locations to date and will expand further in fiscal 1999.

Supplier Integration Road Map

		Activity	Administ R&D	Product & Business Need Phase	Concept Phase	Planning Phase	Project Phase	Module to Master Transition Phase	Order Fulfillment Customer Improvement Phase
1		Shared 10-year product plan	X						
2		Coordinate supplier and Deere PDPs	X	X					
3		Develop data exchange plan by supplier category	X	X					
4		Select critical suppliers	X	X					
5		Weekly phone conference call	X	X	X	X	X	X	X
6		Use of digital photos to communicate with supplier	X	X	X	X	X	X	X
7		Confidentiality agreement	X	X	X	X	X	X	X
8		Created office space for supplier use	X	X	X	X	X	X	X
9		Supplier councils for castings, machine houses, other communications	X	X	X	X	X	X	X
10		Shorten communication loop to supplier (ex-works employee quality engineer not frames of contacts of supplier)	X	X	X	X	X	X	X
11		Share best practices -- PDP & OFP	X	X	X	X	X	X	X
12		Supplier attends training with John Deere employees -- ProE	X	X	X	X	X	X	X
13		Provide electronic commerce training	X	X	X	X	X	X	X
14		Use of suppliers expertise in Supplier Development Project -- Example: @ Husco & Sauer	X	X	X	X	X	X	X
15		Develop understanding of quality & reliability expectations	X	X	X	X	X	X	X
16		Exclusivity agreement	X	X	X	X	X	X	X

The "Supplier Integration Road Map" is a collection of best practices. It is a tool that is used to support Supply Chain initiatives around the corporation.

"Supply Chain Integration is not a momentary event or point in time. It is an on-going relationship born of mutual respect, nourished by continuous improvement and driven by a relentless pursuit of excellence."

Lon Jennings,
Sauer-Sundstrand

Backhoe Group invests \$5.1 million in Fabrication Area

This \$5.1 million investment will allow us to be more responsive to customer needs and enable us to achieve our market share goals.

An investment of \$1.5 million was made in sheet and plate manufacturing by purchasing two 3800 watt Trumpf lasers. These lasers are capable of cutting up to 20 mm thick material and providing cutting speeds that are 25% to 50% faster than current laser equipment in the factory. The two machines will be installed in the Vehicle Main Frame and Dig Component Modules, increasing laser capacity by 50% and replacing a 12 year old plasma punch machine. The first machine will be installed in December 1998 and the second will be installed in January 1999. Additionally, parts that have been laser cut at an outside supplier, due to their capacity constraints, will be sourced back to the Dubuque Works.

\$2.1 million was invested in the weld areas to increase output by 50% without losing the efficiency of robotic content. This investment included the purchase of five new robots, plus the relocation and reapplication of four existing robot systems. The department floor plan was revised with a goal to keep the type of robot system consistent for a product line.

The new robots are Genesis Versa systems which are less costly than our other robot systems. It takes just two days from the time these robots are received until they are producing parts! Other systems require two weeks to install. Our goal is to further reduce installation time to just four hours.

With the support of our Toolroom, we are making our fixtures more flexible. This allows us to produce different models of the same part on a single fixture with little or no set-up time. Also, our new extendible dipper robot fixtures are able to produce standard dippers. When the product mix of standard dippers versus extendible dippers changes, we are able to produce to the schedule without overtime and without changing the manual/robotic weld content.

The main frame robot cell and fixturing was adapted to allow us to bring the 315SE Sideshift Backhoe back to Dubuque.

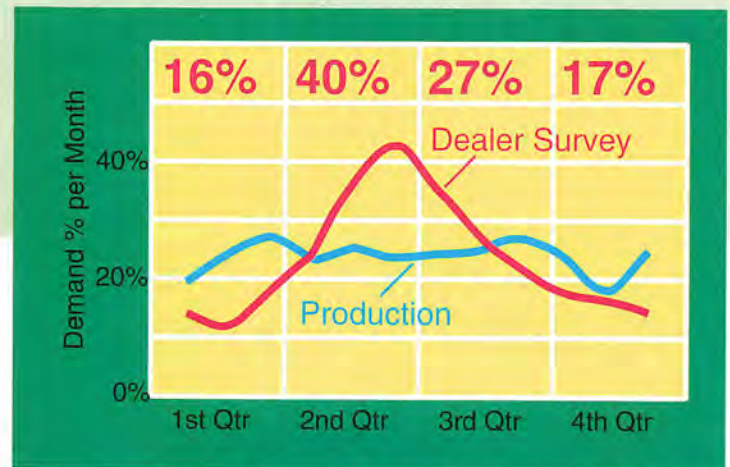
\$1.5 million was invested in expanding the Makino Machining Cell in the Vehicle Mainframe Module. A new Makino MC1513 Machining Center was installed. The new machine will run in a battery with two other MC1513 machines and will be served by the same pallet changer that serves the two current machines. Seven additional pallet stands and one additional load/unload station provide space for a total of 21 pallets.

The Makino Machining Cell produces three major fabricated sub-assemblies for the 310E, 310SE and the 410E vehicle main frames. The third machine is needed for capacity when running at peak production schedules. The machine will also relieve the other machines in order to allot time for planned preventive maintenance and major repairs during lower production schedules.

Estimate to Cash

Estimate to Cash is a redesign of the way John Deere and its dealers supply our equipment to meet customer demand. To every part of our organization has had to make significant change. Here's a brief review of what we've done to get ready, our performance to date, and our plans for the future.

1999 - A New Way of Doing Business



Instead of having level production throughout the year, we will more closely follow seasonal production needs as they are identified by the dealer survey.

Background

In April 1997 Pierre Leroy, President, Worldwide Construction Equipment Division, chartered a team of CED employees to cut in half the time from when dealers *Estimate* their future product needs until the time

the dealer receives *Cash* from the end customer - *Estimate To Cash*. The ultimate goal is to make CED a more flexible business. Flexibility allows us to respond to and meet upturns in demand, and to avoid overproduction during

Although we are comfortable producing 25% of our product each quarter, it isn't the best thing to do for our business.

economic downturns. While a challenge to implement, the benefits are shared by the customer, dealer, and Deere. At the factory we expect to benefit by higher production

as we more quickly respond to a "hot" market, and by maintaining profitability during slowdowns. Since completion of the redesign in September 1997, the entire division has been preparing to operate in the new environment.

Preparation for Success

Manufacturing

One of the biggest conclusions from the redesign was that although we are comfortable producing 25% of our product each quarter, it isn't the best thing to do for our business. To make the transformation from level to seasonal production, we have invested significant effort and capital to become more flexible. In Dubuque alone we have invested \$5.0 million in the backhoe and \$2.3 million in the crawler areas to increase production capacity. Process improvements to more efficiently utilize all of our resources have also been the focus of Demand Flow Technology and Lean Manufacturing

training. Perhaps the greatest challenge we are working to resolve, however, is in more closely matching the talents of our workforce to the seasonal needs of our customers. To do this we plan on focusing all of our personnel on production during the peak of the season. This means moving other tasks to the part of the year with a lower production schedule. This time will be used for training, continuous improvement, and non-traditional assignments. These undertakings are a significant statement about the entire division's commitment to make this process work. As we move forward, each of us needs to continue to evaluate our part of the business to ensure our processes match the new business needs.



Supply Management

Our suppliers are an extension of our factory, and as such, they must be aware of our internal changes and make changes at their facilities to help us meet our seasonal material needs. Just as was done inside our factory, we first had to teach our suppliers the new process, highlighting the impacts to their production. This was followed up with site visits to key suppliers, and to those who were not confident that they could meet our seasonal needs. Specific, short-term plans were made with suppliers who were not able to meet the seasonal demand through their normal production processes. In certain instances, our Supplier Development group consulted with suppliers to improve their flexibility. However, as with any situation, one solution does not fit all, and so for some low volume components we have elected to maintain a higher level of on-hand material. Finally, to improve communications, and minimize paperwork and parts counting, computer systems have been developed to enable Min/Max and Controlled Delivery, and Kanban ordering. Our suppliers realize what a large challenge we have in front of us, but they also recognize the potential benefits. Forty-three suppliers participated in a Readiness Quotient session in June 1998, and the consensus was that they were "ready to support Estimate To Cash."

Purchased Product

Similarly, with our purchased product suppliers there has been a great deal of effort to ensure that our network of factories can perform in the new environment. This involved an initial presentation by Deere and continuous discussions over the last year. The end result has been a significant reduction in the lead times for our purchased products. Cameco, Harlo, Vermeer, Liebherr, IJD, Deere/Hitachi have all reduced lead times by two months! Again, shorter lead times from order to tractor shipment helps to make our division more responsive to the market. Our manufacturing partners' willingness to change with us has been impressive.

Dealer Training

Beginning in November 1997 the ETC implementation team initiated a pilot for the ETC process with 27 dealers that sell backhoes and log skidders. The marketing organization began working with the dealers to help them understand and appreciate the significant impact of the new process on their business. The shorter order windows provide dealers greater flexibility, but also require them to much more closely manage their inventory. The change is significant enough that many dealerships have decided to hire an additional person to act as their Inventory Manager. In June the remaining 80 dealers were introduced to the ETC process. This was followed up with additional training in September to reinforce the ETC concepts, and to answer questions. This was all done hand-in-hand with the Commercial Operations Managers (ComOps), the people who are in the field with dealers every day. The ComOps will continue to improve dealer understanding of what will be required to succeed. They will also help to develop effective new processes at the dealerships.

Pilot Performance

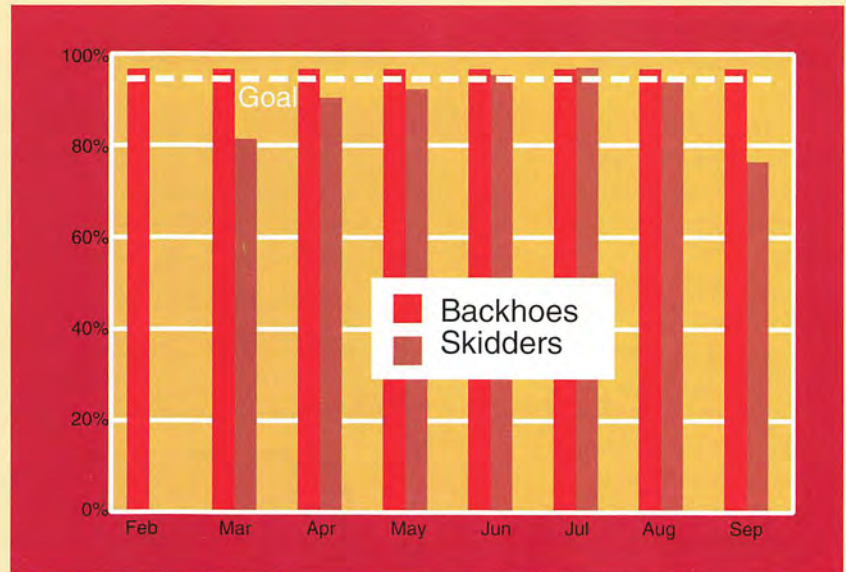
To help ensure that we are achieving our goals in the division and at the factory, we will use four metrics to track performance.



1

20/40 Day Commitment

Can we meet our promise to the dealer to produce Retail and Replenishment tractors in 20 production days, and Inventory tractors in 40 production days?



2

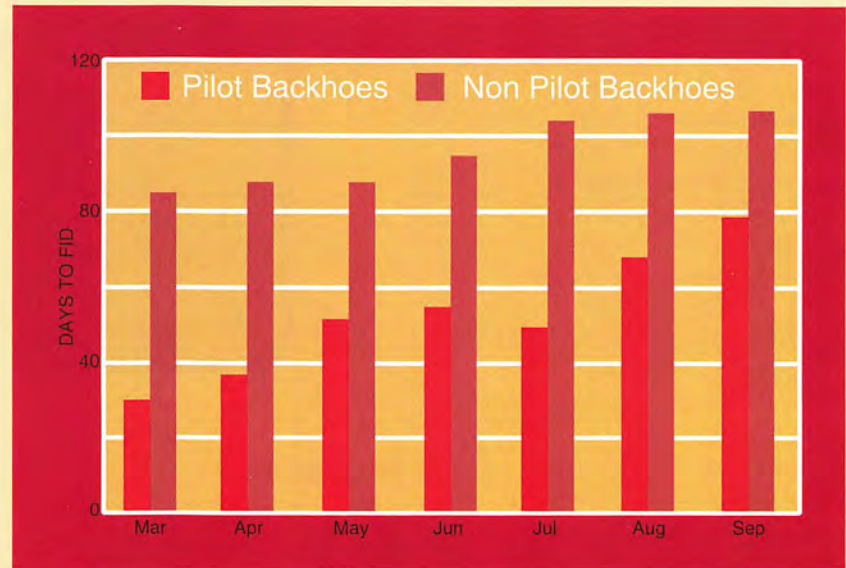
Customer Commitment Performance (CCP)

The percentage of orders completed by Expected Warehouse Date (EWD). It is important that we know how well we are executing our build plan. Are we warehousing tractors on or before the expected day? If not, we need to find the cause so we can develop an appropriate solution. Therefore, we will track machines built after the EWD. We will not penalize ourselves for building a machine early because "Early Builds" are in accordance with our continuous improvement pay plans. This metric will help us to continuously determine where process improvements are required.

3

Invoice to First in the Dirt (FID)

The time a tractor sits on the dealer lot before being rented or sold. Our goal is to reduce this from the historical 96 days to 34 days.



4

Total System Inventory

The amount of inventory on hand at the factory and on a dealer's lot. While inventory may increase in some parts of the system to allow greater manufacturing flexibility, the overall effect of the new process should be a reduction in the total inventory level. This benefit will begin to become visible over the next year as dealers adjust their inventory levels to match our new level of manufacturing flexibility.

Benefits

Expected from the redesign:

- Better match our supply to actual demand.
- Improve willingness of dealers to transfer and swap machines. This reduces inventory required to run the business.
- On the average, less field inventory. This means less money required for Deere and the dealers to run the business.
- Potential increase in market share through Deere's unique ability to supply the exact machine the customer desires in a timely manner.

710D:

Some dealers have historically been reluctant to order the 710 because of the cost of keeping a high dollar, low volume unit on the lot. With the new ability to order the machines for specific customers, the eight month order activity for our pilot backhoe dealers was 26% higher than their total orders for all of the previous year!

Multiple Unit Deals:

Historically, dealers have had a difficult time bidding on multiple unit deals because of the long lead time for ordering. If they did not have the machines on hand, they could not bid for the sales contract. And few other dealers were willing to transfer machines to the bidding dealer because of the long time until they received a replacement tractor. The new process, which facilitates greater discussion and information sharing between the dealers and the factory, will increase Deere's awareness of sales opportunities. It will also allow dealers to effectively sell to customers with large orders.

During the pilot phase, 16% of the 1,173 backhoe orders were for Multiple Unit Deals – 188 tractor sales that we may have otherwise lost.

While everyone recognizes the enormity of the task, people from all parts of the organization have voiced their support for this positive change in our business...

"Estimate to Cash is a really simple concept...we will build what the customer wants and at the time he wants it. The objective is to meet customer needs faster and more accurately than anyone else in the business. By doing this, we can expect to gain more customers and grow the business."

Max Guinn
General Manager,
John Deere Dubuque Works

"From the Union's perspective, Estimate To Cash should take care of our customers needs in a more timely manner. This should result in increased sales and market share, as well as provide the potential for more jobs for our members."

Don Avenarius
Chairman,
UAW Local 94 Shop Committee

"Estimate to Cash has given us a competitive advantage. A Las Vegas landscaper, who was strictly a Case backhoe owner, was negotiating with us for two four wheel drive loaders. During our negotiations, he said if we could get him three 310SE's equipped to his specifications by the end of the month he would include those in the deal. We had no 310SE's in stock that matched the customer order, however, with Estimate To Cash we were able to retail order those backhoes and deliver them in 30 days."

James Blaine
Blaine Equipment
Las Vegas, Nevada

Due to the shortened lead times from the new process, James also gives credit to Estimate To Cash in closing a deal for eighteen 310SE's to a Case backhoe fleet owner.

"Estimate To Cash is working at Blaine Equipment."

The Future

Obviously there's been a lot of hard work to prepare for this change to our business. As we begin 1999 and enter into this new process, we all realize that a lot of hard work still lays ahead. Over the next year we can expect to see dealers adjusting their inventory levels in line with our goal of reducing overall system inventory. At the factory we will continue our work to improve flexibility. This and other efforts will help us meet the demands of the seasonal peak. During the slower part of the season we will focus on training and employee development. There will be changes in the year to come and we recognize that this will be a learning process. There may be bumps in the road, but the gains in strength and the ability to endure for the long haul will make the effort worthwhile for our business.

\$250,000 John Deere Foundation grant allows the University of Wisconsin-Platteville to develop state-of-the-art lab.

The largest single grant the University of Wisconsin-Platteville has ever received came this summer from the John Deere Foundation. It will be used to establish the "John Deere Automatic Controls Laboratory."

Richard Schultz, Dean of Engineering, Mathematics and Sciences said the lab has generated real excitement on campus. The school is looking forward to installing equipment and having it ready by the end of the year. Engineering students will begin conducting controls experiments starting second semester.

Laboratory goals are to provide interdisciplinary, hands-on education for future electrical and mechanical engineers; meet educational and training needs of John Deere; and form a strong, mutually-beneficial partnership between the University of Wisconsin-Platteville and John Deere.

With test stations in mechanical, electrical, thermal, hydraulic and advanced control systems, the lab will provide improved hands-on learning.

Faculty-generated design projects will be an integral part of the interdisciplinary learning process. Projects will include designing, building, programming and testing the following:

- ✓ A four-degree-of-freedom SCARA robot.
- ✓ A conveyor system.
- ✓ An anti-lock brake system project.
- ✓ An active noise control project.
- ✓ A space heating system project.

"This is truly an exciting deal," said Mac Klingler, John Deere Manager of Advanced Research and Development and Product Evaluation. "The controls grant is the largest single, individual grant that UW-P has ever received. It is also the largest grant sponsored by the John Deere Construction Equipment Division.

"The partnering relationship between CED and UW-P is a win-win situation for both. The lab will provide students a great opportunity for high-quality education, plus they will benefit from interaction with practicing engineers at John Deere. And having a modern facility close to the Dubuque Works for design and testing needs could reduce cost and product development time.

"Through interaction with university students, we expect that the best qualified graduates will be attracted to John Deere," said Klingler.

"Use of automatic controls on John Deere products is increasing," says Dan Williams, a controls engineer and graduate of UW-P. "The lab will provide a great opportunity for future engineers.

"An operator may not realize they're there, but automatic controls definitely make a difference in machine performance," says Williams.

Driveability of C-Series and H-Series Crawlers is an example of automatic controls use. They cause the machines to operate more consistently when an operator steers them under different operating conditions. Other examples include self-leveling on backhoe loaders and return-to-dig on 4WD loaders.

Worldwide competition requires a well-educated workforce that is continuously trained in new processes and technologies. John Deere looks at the University of Wisconsin-Platteville Controls Lab as an investment in the future. It will prepare engineers for tomorrow's ideas!

Among the Vital Few Annual Improvement Goals, H-Crawlers were our number one priority!



"Absolutely the greatest project I've ever worked on. Customers will go 'wacko' over this machine. It's easy to use and operator friendly. There's never been anything like it!"

Harry Schaller
Crawler Fabrication Supervisor



"We're building an electronic knowledge base which will be supplied to the dealer through **ServiceEXPERT**. This provides electronic diagnostic delivery through a laptop computer, resulting in more accurate machine diagnostics and less downtime for the customer."

Jim Mueller
Service Information Supervisor



"The ease of control with the hydrostatic transmission doesn't take much break-in. A novice operator could get on this machine and easily know what to do. Durability and reliability tests of the system look great."

Marge Ballina
Test Engineer



"The H-Series program has been very challenging. We have applied many new development methods and implemented a new Product Delivery Process in the midst of a complete redesign of one of our division's most important product lines. We were able to significantly raise the bar on involving everyone earlier in the project, and we are seeing the benefit in early project results. Project teams and team leaders deserve a tremendous amount of credit for driving new methods and processes that will benefit our whole division. They've delivered a new product that our customers and dealers are saying they absolutely love."

Joe King
H-Crawler Program Manager

Throughout 1998, a significant communication effort took place to build an understanding

of our business goals and objectives among all employees. This understanding allows each employee to have a "line of site" between their job and its contribution in making the organization a success.

Part of the communication effort this year centered on the *Vital Few* Annual Improvement Goals. Of the *Vital Few*, successful completion of the H-Crawler program was the most important.

Through the dedication and hard work of everyone at John Deere Dubuque Works, *The Year in Review* is able to proudly display the following pages.





"Using an electronic prototype build for the first time worked great. Having all the parts fit together was exciting because it made it a 'non-event.' Key electronic tools were used that were not even in place a year ago. Some people were not familiar with simulation tools and needed to be trained. They EXCELLED! The end result proves the point."

*Denis Kremer
Model Engineering Supervisor*



"In the past they'd build a tractor up in Experimental, then bring it down and tell us to build it. We had no say in any of it. We've been involved with the H Crawler from the beginning, working with the engineers right on the floor. We tell them what works and what doesn't and they listen. We've come a long way!"

*Darrell Wilkinson
Crawler Assembly Facilitator*



With the H-Crawler program we have truly raised the bar in the area of quality planning. The core teams successfully integrated quality into virtually every aspect of PDP. Quality was driven, not just by the Quality Services group, but by every contributor to the H-Crawler program, regardless of their functional area of responsibility.

*Mike Budan
Quality Engineer*

"This was the first time I was involved in a project where PDP (Product Delivery Process) was used. The process involved utilizing new software tools. We used a 3D model for dimensioning which facilitated the engineering efforts. It shows interferences and the appearance of the tractor, as well as assembly ability. We knew right away if something was going to work or not."



*Maria Lauck
Design Engineer*



"The goal for this crawler was to have 80 percent robot welding. We've exceeded that! Less manual welding assures more consistent weld quality."

*Merlin Busch
Welding and Fixturing Facilitator*



"We're doing some exciting new things that will help mistake proof our assembly process. Work instruction will be on-line and the assemblers will have the latest information available to them daily. Also, they will be able to call up any assembly on the unit, get a picture of it along with the parts that go into it and use this information as an assembly or training aid. This makes for great mistake proofing."

*Ron Stephenson
Crawler Assembly Supervisor*



Randy Sergesketter
Operations Manager, Crawlers

"Great looking machine. Looks like your teams have been listening.....I'm going to sell a bunch of them!"

These comments were made by dealer representatives as the H-Crawler was unveiled at the annual marketing meeting

in Palm Springs in November. The reaction from our marketing organization was even more supportive. For most attending, this was their first opportunity to witness first hand, the machine they have been anticipating and hearing so much about. If you combine this reaction with the overwhelming support of over 150 customers and operators who have actually operated the H-Crawler, it looks like 1999 will be a very exciting year!

The H-Crawler program has achieved excellent results to date. The teams and all involved with the program are to be commended. The H-Crawler program has driven new levels of excellence in several areas including: Implementation of the Product Delivery Process, Quality Planning, Electronic Analysis and Simulation, and Teamwork. Customer and Deere evaluations indicate the machine performance is right on track. Quality planning has been extensive and quality goals are within reach. The H-Crawler is also meeting a very challenging cost reduction goal. The list goes on and on. As each new product program should, the H-Crawler will establish new benchmarks in design, manufacturing, test, supply management, product support, marketing....all the support areas required to produce a new product.

A lot of work has been accomplished in the past year and each of you should be very proud of your accomplishments. Our marketing organization, dealers and customers are counting on us to deliver the world's finest solution in crawlers to the marketplace this spring. The excitement and anticipation is growing. We have excellent results to date, but the true test is yet to come. Remember, our customers will judge us by how the machine performs in the field and against the competition. They'll judge us by their operating and maintenance costs. They'll also judge us by the quality and reliability of our crawlers. We need to stay focused, stick to the plan, meet our commitments, and make sure the H-Crawler is every bit as good as we all know it to be.

Randy



John Deere
H-SER
World's Best Cr



A half century old and still running

The exact age of this one isn't known, but the very first product manufactured at John Deere Dubuque Works, the Model M, was produced from 1947 until 1952. That puts this Model M right at the half-century mark.

It's home today is Tucson, Arizona, where it was acquired by the Tucson Water Department back in the 1960s in a farm purchase. They put a trailer ball on the three-point hitch and used it through the years to move equipment. A year ago, it was showing its age and was brought into the shop for repairs. Following the diagnosis there was talk of selling it at an auction. Then someone suggested restoring it.

"I wanted to have a specific purpose for fixing it up, so we decided to enter it in the Earth Day Parade," said Ray Bayless, heavy equipment mechanic for the Tucson Water Department. "It needed a lot of work. Someone must have used the hood to stand on because

it was pretty much caved in," he said.

Employees in the shop began working on it in their spare time. Then someone got another idea. Since the restored tractor was going to be used in an Earth Day event, how about converting it to a cleaner burning fuel like compressed natural gas (CNG)?

Not a bad idea they thought, so they contacted Southwest Gas Corporation in Tucson. Southwest found enough spare

parts and provided the technical know how to complete the CNG conversion.

The restored tractor, complete with signature "John Deere Green" and its accompanying float has earned second place in the Tucson Earth Day float competition for the past two years.



When this Model M tractor was converted to CNG (compressed natural gas), one of the considerations was where to put the steel CNG tank. When mounted in the back, it caused the front wheels to rise off the ground. Eventually it was installed under the rear axle which allowed more equal weight distribution.

Accelerated Factory Plan begins \$400,000 in annual savings sooner

A five-year strategy that includes demolition of I, J and K Buildings; construction of a Product Demonstration Site; and relocation of service parts manufacturing

Implementation of the Five-Year Factory Plan that began for our facility in 1995 continued throughout 1998. A major component of this plan called for demolition of I, J and K-Buildings to be completed by late 1999. Demolition of these buildings will save approximately \$400,000 per year in heating, lighting, taxes, etc. In order to start benefiting from these savings sooner, the schedule for this phase of the five-year plan was accelerated. Demolition will now be completed by the end of 1998! To support this plan, the cable and 710D transmission line were relocated ahead of schedule, and construction of office space for the Materials Services group was accelerated to allow their move from I-building.

In total, 390,000 square feet have already been demolished, and approximately 5.5 acres of concrete was removed, crushed, and reused around our

facility. The area left open will become a new Product Demonstration Site. Visitors will be able to see our products in operation through windows that will be installed along the east wall of K-Building (south of the Fitness Center).

Another major component to the Five-Year Factory Plan includes establishing service parts manufactur-



ing in F, G, and H Buildings. This move from W-5 Building was completed in 1998 and supports our division's initiatives for enhanced customer service and service parts delivery, as well as optimizing use of our manufacturing facility.

Offices receive a facelift

1998 proved to be one of the busiest years in recent history for upgrades to our office facilities. The many changes have taken us closer to completing our five-year plan for office improvements, have expanded office space available in the factory, and have enhanced the overall appearance and use of our facility. With the renovation of X-Building, completed in April 1998, office space was added for 60 additional employees, X-Building cafeteria was renovated, conference rooms were added, and the photo lab and virtual reality room were improved. In the spring and summer of 1998, Crawler and Loader Backhoe module offices were expanded to add conference rooms and space for 16 additional employees. During summer shutdown, renovation of the medical area

began with the first phase coming to completion in October; this revision will continue through 1999 and will result in a much improved medical treatment facility. Additionally, the main factory entrance across from

A-building is being significantly improved. The first step in this process was construction of a new office for the Materials Services group and Tool Room/Maintenance support group just inside the D-Building entrance. Work began in October to widen the entrance hall and a canopy will also be constructed to match the canopy coming from A-Building. A new module office for 54 employees in the Engine Division was completed in December with a new maintenance office soon to follow. Finally, a new building is being erected near X18/X19 to house sound testing equipment that will be used to test our products.

During 1999, revision of the Information Systems and Purchasing areas will complete the five-year plan for office revisions.

This new equipment will increase the effectiveness of our plant protection

An outdoor warning siren was installed to enhance the warning capability to the factory in the event of severe weather. The siren has an effective radius of 5,200 feet. It was installed on the East side of the utility passageway where I, J and K-Buildings were demolished. In the event of severe weather, it can be

activated by radio control from the Main Gate.

A new access control system has also been installed. It was developed to provide needed additional capacity and to make the system Year 2000 compliant. All employees received new badges to gain access to the facility using the new system.

Plant Utilities

During the past year, the hourly employees of Facility Services made several improvements to the factory. Some of these include:

- Pouring over 300 yards of concrete to repair or replace floors and foundations - enough cement to create a column one foot square and more than 1½ miles high!
- Replacing 70 wooden overhead doors with new steel doors. (There are a total of 243 overhead doors in the factory).
- Building new fixtures and revising others worth a total of \$1,141,064!
- Continuing to introduce maintenance free batteries, thus eliminating battery changing operations.
- Improving housekeeping standards in the factory.
- Applying 852 gallons of paint to guard rails, fire hydrants, columns, gas metering stations, stairs, railings, offices, and a half-mile of cyclone fencing!
- Assisting in the installation of a new washer in the Engine Division, wiring the new Fitness Center and reconfiguring departmental layouts to accommodate the widening of the main aisle.
- Providing assistance during River City Rallye Fly-In activities. It was a small, but important contribution, as factory personnel take a more active role in our efforts to be a *marketing organization*.



Bart Germain (left) and Tom Brandt built this new moldboard forming fixture in the Tool Room. It eliminates the need to form a moldboard on a large form roller. That process took a lot of guess work because of gauging difficulties. And since it was easy to over bend or under bend the part, additional handling and setup was required to get a good part.

With the new forming fixture, material is located in place and formed. A quality part is produced the first time with no guess work involved! Also, the old roller method required extensive operator training. Now, anyone can run a good part with very little break-in.

This is a short list of the many activities that people in Facility Services are involved in each day. Their efforts at maintaining and improving the quality of the workforce are reflected in this past year's shutdown. It was characterized as the best ever and the startup afterwards went very smoothly!



HVAC System

1998 saw the completion of several major upgrades to the Honeywell system that controls building heat, ventilation and air conditioning. The result of the upgrades is a simplified, graphical interface control system that allows significantly improved capabilities for HVAC scheduling and maintenance monitoring.

Installation of standardized heating and ventilation controls was completed to reduce maintenance costs. System modifications were also completed to allow automated summer/winter changeover of heating and ventilation units.

Construction of new offices located in the factory has allowed us to start implementing a standard HVAC control system for new projects. These offices will be equipped with digital controls for improved HVAC system monitoring and performance.

Other improvements that are helping make the Dubuque Works a world-class facility

- ✓ Continuation of the five-year plan for replacing roofs.
- ✓ Replacement of a PCB transformer.
- ✓ New metal siding and internal insulation throughout the factory.
- ✓ Phone system upgrades for enhanced DMAC customer service.
- ✓ Pager system upgrade for faster response time and system availability.
- ✓ Video conferencing upgrade enabling delivery of Masters Degree classes.
- ✓ Replacement and upgrading of numerous HVAC units.
- ✓ Storm sewer improvements.
- ✓ Factory auditorium improvements.
- ✓ Continuation of emergency lighting installations throughout the factory.
- ✓ Utility metering installation.
- ✓ X-Building parking lot expansion.
- ✓ Touch plate lighting controls for Crawler Division.
- ✓ Caulking of factory tilt-up panels for energy conservation.
- ✓ Replacement of glass in roof top monitors for better lighting and ventilation in F, G, H-Buildings.



Dubuque Works General Manager Max Guinn and UAW Local 94 President Terry Gartner cut the ribbon at the Fitness Center grand opening ceremony on July 1. Shannon Wainwright and Liz Newmann are on-site personal trainers. The 17,600 square foot facility features a 0.1 mile run/walk track, basketball area, aerobics, golf driving range, free weights, universal weight equipment and cardiovascular machines.



When asked what made him decide to exercise, Mike Ernsdorff (above) replied, "I want to keep getting older!"

"I was pretty skeptical about John Deere getting involved in the fitness business, but now I'm involved," he said! I've never been in an exercise program in my life, so I went in not knowing anything about it. I figured I would just do the treadmill for cardiovascular exercise. Then the people working at the center suggested I also try weight lifting to help build muscle tone. I can't say it's 'fun' but I know it's healthy."

Environmental efforts put Dubuque close to new certification standard

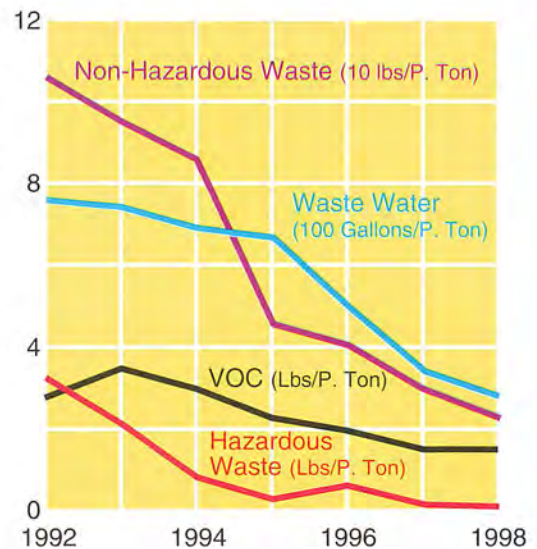
In August 1998 a new corporate Environmental Management System Standard was adopted. The new standard is based on ISO14001, the environmental equivalent of the ISO9001 Quality Standard. The Dubuque Works has been registered to that standard for several years.

While neither the Dubuque Works nor any of our competitors have announced intentions to become ISO14001 registered yet, there has been nearly universal movement in preparing for

eventual certification.

"Full compliance with the new corporate Environmental Management System Standard would position the Dubuque Works at about 80% of the way toward meeting ISO14001 certification requirements," according to George Hellert, supervisor of Environmental Engineering. "The new standard focuses on the management side of things. It addresses product design as well as traditional manufacturing environmental issues," said Hellert.

Thanks to the efforts of all John Deere Dubuque personnel, 1998 was another environmentally successful year. It was the sixth consecutive year of reductions in landfilled waste!



"Wet Lab" monitors water to river

The State of Iowa requires certification of laboratories performing analyses of water discharged to the Mississippi and Little Maquoketa Rivers. Our labs perform over 170 such analyses monthly. Representatives of the University of Iowa Hygienic Lab recently conducted a formal audit. The Iowa Department of Natural Resources has granted our lab full certification.



Roger Ricke (left) and Rich Schaar are shown in the Environmental Engineering "Wet Lab" working with the Atomic Absorption Spectrophotometer. It is used to analyze heavy metals (cadmium, chromium, lead, zinc, etc.) in water.



The making of a modern paint line

7.5 million dollars was approved in September 1997 for new paint systems in the crawler and backhoe areas. Now, just over a year later, both systems are up and running.

Enhancements over the old paint system are many...from easier troubleshooting to streamlined efficiency for getting parts loaded, painted, and to the assembly line. Let's take a look at why this 7.5 million dollar project was a worthwhile investment for John Deere Dubuque.

With a paint system over 30 years old and greater demands with Estimate to Cash, the time was right for bringing our paint process in line with the focused factory concept. The old Department 162 paint system required that parts from the crawler and backhoe divisions be shipped out of their factory

areas, requiring extra handling and scheduling.

Through joint efforts starting several years ago, crawler and backhoe personnel worked with Plant and Chemical Engineering to plan the needs and changes necessary to develop a system that would be second to none. The biggest hurdle was to stay within cost constraints. Designing two separate systems with basically the same design made the project cost effective. Not only did having common systems pay off during installation, the use of common parts will continue to be a cost benefit for future maintenance.

Benefits include:

- Painting within each focused factory during the normal product flow.
- Simplified part mix which reduces scheduling complexity and excessive material handling.
- Capacity for painting requirements during peak times with Estimate to Cash.

Besides updating the systems, the paint was changed to a new polyurethane paint. It provides a superior finish and allows more efficient throughput.

The previous paint required a "double pass" through the system. Parts would be primed and dried, then run through the system again for top coating. The new paint allows "wet on wet" application. Following the prime coat and a minimum 10 minute "flash-off" period, the top coat can be applied.

With the completion of this project, we have new, fully integrated paint systems and urethane paint quality, at a price we could afford.

Let's take a look at some of the features that make the new paint systems state-of-the-art.



Maintenance work is more efficient due to easier access to equipment and common parts between both paint systems. Electrician Dave Maiers (right) and maintenance man Tom Reynolds (middle) talk with Project Engineer Loras Kluesner from the maintenance pit.



This 36 x 51 foot pit, located under the crawler paint booth, was quite an engineering feat in itself. At its deepest point, the hole measures a whopping 19.5 feet! This allows the system to operate with a single level conveyor, providing significant operating and maintenance advantages.

Due to the size of the hole and the unstable sandy ground, an excavator could not reach completely into the hole to excavate. So a skid-steer loader was placed in the hole to push sand to the excavator. Once the hole was dug, 300 yards of concrete was required to construct the floor and walls for the paint pit.

Since the ground was removed from under some of the support columns in the area, a temporary super structure was constructed to provide support for the building during construction.

Much of the work to construct the booth was "a first" or the "biggest" for the contractors...something many people will talk about for a long time.

Project Manager, Loras Kluesner, beams as he applauds the efforts of so many who worked on this project. "We broke ground in February and by September were running parts through the system! What's really amazing," he continues, "is that with all the construction and final change-over from the old paint line to the new, not one crawler was delayed. Truly a 'mark of excellence' for a project of this size."



286 tandem-axle dump truck loads of concrete and sand were removed from this pit!



Paint is stored in a "paint kitchen." This area provides a safe location for paint storage and mixing tanks. The floor is designed for spill containment and doors shut automatically in the event of fire.

Paint is transported from a 250 gallon container to a 70 gallon day tank where a catalyst is added. The catalyst, which is very reactive to moisture, is stored in a tank blanketed with dry air.

Air is drawn through the paint booth at 100 feet per minute and exits through a water wall emissions control system under the booth floor. The water wall removes overspray particles and empties into a 10,000 gallon water tank. A chemical detacifier in the water "kills" the paint so it won't stick to anything. Paint particles are then skimmed off and landfilled.



Follow the path as raw metal is transformed into gleaming John Deere yellow!

After the wash, Dave Puetz air blows and masks parts in preparation for prime coating.



A low speed conveyor moves parts through the washer at 6 ft./min. while they undergo a three-stage surface preparation. As they exit the system, they're returned to the conveyor running at 45 ft./min.



From the load station, parts are transported at 45 ft./min. to the washer queue. The washer system will not allow parts to enter unless they can finish passage. For instance, if the masking area on the other side is full, parts will be held prior to the washer until space is available. By avoiding extended periods in the washer, fewer problems occur with paint adhesion and corrosion.



The path begins with Larry Schwager loading parts on the line using a hydraulic lift table. The distance parts have to travel to get to the line is minimal because the paint system is located just east of the fabrication area. In the backhoe factory, the system is just east of lift arm, boom and dipperstick fabrication. Vehicle main frames will be delivered to the system by automated tugger carts.



Urethane primer and topcoat is applied wet-on-wet. After the prime coat is sprayed, parts travel to a flash-off area for a minimum ten minutes. They are then topcoated and move to a second flash tunnel prior to entering the oven. The paints are mixed with catalyst at each of the paint booths through a pre-set mixing system controlled by the Chemical Engineering Department.



Parts travel through one of two sides in the oven at temperatures up to 200 degrees. They undergo two twenty minute cycles and then exit to the cool down area. They stay in the cool down area for 15 minutes.



Here, Dave Maiers checks the control panel. The system is operated by computerized control panels that provide easy to access information. They can identify where parts are in the system and how long they've been there. If a problem occurs, the control panels immediately identify where the problem is located.



Once out of the oven, parts are checked for defects and paint thickness. Here, co-op student Todd Walke (son of Dianne Walke, Business Analyst in Product Support) is checking paint thickness using a dry film thickness gauge.



Deere/Vermeer joint effort yields patent

Over two years ago John Deere teamed up with Vermeer, our scraper manufacturer, to embark on a joint effort to patent a rear wheel assist scraper option. Deere had realized there was a long standing need to get power to the rear wheels, and Vermeer



Arvid Saele (left) and George Kalhorn from John Deere Dubuque Works, worked with Larry DeVore and Duane Harthoorn from Vermeer to develop a four-wheel drive option for scrapers.

knew that this option would enhance sales and grow business. This understanding led to the development and patent of "Max-Trac," a hydraulic rear wheel assist system for 762B scrapers. The option features on-the-go operation without stopping or jerking. The patent was issued in November 1997.

"This option not only helped our scraper program," said scraper engineer, George Kalhorn, "it helped build our relationship with Vermeer and provide security for each of us in the product. Based on the success of the 762B rear wheel assist, Vermeer now offers the option on the 862B."

"Patents are becoming more important to John Deere," according to Mac Klingler, Manager of Advanced Research and Development and Product Evaluation. "There has been a change in case law, and defendability of patents is being upheld. Ownership of an initial idea and art work needs to be protected, and that can be accomplished through patent disclosure. Patent disclosure provides witness or proof that we are working on an idea and entitles us to some ownership should someone else patent the idea," says Klingler. "It's critical for us to

Patent story continued on page 39

Area students awarded John Deere Dubuque Works welding scholarships

John Deere Dubuque Works, in partnership with Northeast Iowa Community College and Southwest Wisconsin Technical College established welding scholarships with each school in March.

Based on the results from a series of tests and interviews, the two \$2,500 weld scholarships were awarded to Scott Franzen, son of Mike and Kandy Franzen from Monmouth, Iowa and Mark Heims, son of Randy and Diane Heims from Muscoda, Wisconsin.

Steve Wohlwend, Human Resource Manager said, "These scholarships represent John Deere's commitment to area youth. We are particularly excited



Scott Franzen



Mark Heims

to be teaming with such strong community colleges. Additionally, our support for these scholarships represents the importance of having well-trained welders involved in our manufacturing processes. Welding is critical to our ability to continue to build the world's finest construction equipment."

Ron Bakke, director of Resource Development at NICC and Dick Rogers, president of Southwest Tech, (both holding certificate) accepted welding scholarships presented on behalf of John Deere Dubuque

Works by Deb Gremmels, manager of Training and Development; Terry Gartner, president of UAW Local 94; and Steve Wohlwend, manager of Human Resources on March 26.



These two-year associate degree programs are tied to our business needs

John Deere Dubuque, working with Southwest Wisconsin Technical College and Northeast Iowa Community College have begun working on the establishment of a two-year associate degree program in Industrial Technology. Courses will be offered that address specific work competencies required at the Dubuque Works. Upon graduation students will have completed studies in welding,

machining and a variety of supporting course work that will provide a solid background for their careers. Plans are being made to begin the Industrial Technologies Program in the fall of 1999.

This course of study will be patterned after a similar program being offered by the Des Moines Area Community College (DMACC) and the John Deere Des Moines Works.

Family Matters

Mike Ansel has realized his thirty-year dream of returning to school. Through the TimeSaver program at Clarke College he is taking accelerated courses in the evening.

Michelle Ansel and her father Mike, an Electronic Test Mechanic in Department 863, both began attending Clarke College in 1996. "My dad came from a working class family that did not have the money to send him to college, so he didn't consider going after he graduated from high school in 1966," Michelle said.

Only 18 weeks after graduation, Mike was drafted and sent to Vietnam. While in the military Mike encountered many people who had attended college. "They encouraged me to go back to school after I left the Army," said Mike. He attended Madison Area Technical College upon his discharge from the Army. However, he never felt he had the information and direction he needed to succeed at getting a four-year degree.

The thought of school stayed with Mike through the next thirty years. "I always felt knowledge was the key to satisfying my curiosity. I have always had a general curiosity about people, places and things" added Mike.

Mike decided to look into going back to school when he heard about the TimeSaver program offered through Clark College. To satisfy his curiosity Mike talked to Dr. Gayle Schou, Vice President for Graduate Studies and Adult Continuing Education at Clarke. With Dr. Schou's help and advice Mike was ready to give his long time dream a shot.

Mike's first class, Dimensions of Communication, inspired and helped him obtain the confidence to believe in himself. "My prior life

experience helped me contribute and be a better student in class. It gave me the confidence to continue in school. I began to feel like college material," said Mike.

In the spring of 1996 Mike's daughter Michelle graduated from Northeast Iowa Community College. "Dad saw that I was struggling to make a decision about my future. He lent me a hand and gave me the confidence to try Clarke for myself. He has always been there, whether helping my brothers with Boy Scouts or just being a mentor. He gives us his valuable advice with his 'Ansel' lectures, where he expounds on the valuable lessons of life." Michelle said.

"Returning to school has brought me closer to my kids," said Mike. "Instead of watching TV, my 12 year old son and 14 year old triplets often spend their nights studying together with me."

Michelle graduated from Clarke with a degree in communications in May of 1998. Mike is working toward a psychology degree. "I know my father was the proudest parent there when I walked across the stage in May. In a couple more years, I will be the proudest kid there when my father walks across that same stage to receive his degree," said Michelle!



*Story rewritten from an article first appearing in the Spring 1998 issue of the **Clarke Catalyst**.*

While much has been said and written about the challenges of the software industry and the year 2000 "bug", the Human Resource function has a similar challenge -- preparing the Dubuque Works for the next millennium. Certainly a common theme of our function's activities centers around preparation for the *future*. Many within our factory remember when we wondered if we would celebrate our fiftieth anniversary. Today, we make plans for the next fifty years.

Zeroing in on our *FUTURE*

by **Steve Wohlwend**,
Manager, Human
Resources



Hiring

No event speaks more to our *future* than the hiring activity that the Dubuque Works has undertaken.

Not only has our hiring been influenced by the anticipation of considerable retirements in coming years but also by growth prospects within our division and factory. Fiscal '98 saw the Dubuque Works welcome nearly 100 new employees to our organization. This is the largest number of new employees brought into our factory in twenty years! The hiring of new production employees has been particularly significant, as the least senior employees previously hired have seniority dating back to 1972. Today we are growing the numbers of production employees even further, with plans to hire approximately 75 new wage employees over the first half of Fiscal 1999. The acquisition of new employees will become increasingly routine in our *future*. This renewal activity presents significant possibilities for our factory and division - it is an exciting time!

Education & Training

Our employee development efforts have been aimed squarely on the *future* as well. Several key initiatives highlight this focus. None, however, highlight it more than well refined succession plans and supporting development activities created to ensure that knowledge is passed as we transition through this renewal period. We will be better prepared to meet the *future* as these development plans and activities, centered around work experience and leadership, take root within our organization. Launched this year was a well structured certification program for our wage work force. It is designed to ensure heightened levels of knowledge in our core manufacturing

activities. Over 350 employees have taken advantage of this training and have been certified in welding, assembly, paint, and machining. Many more await openings and opportunities for this certification training.

Distance learning opportunities are becoming more commonplace within our factory. For several years employees have had the opportunity to take courses through the NTU satellite network, allowing them to stay abreast of business issues and technical developments.

In August, these distance learning



Frank Schroeder (right) talks with Vice President Al Gore during his visit to Clarke College in July to discuss lifelong learning. Frank is a wage employee working in a non-traditional assignment in the Human Resource Department. He is enrolled in the Clarke TimeSaver program.

"We were gratified to learn that the Clarke College John Deere program had attracted national attention like this," said Dr. Gayle Schou, Vice President for Graduate Studies and Adult Continuing Education at Clarke. "Because we've had over 300 Dubuque Works employees take Clarke College courses during the past two and a half years, we know we are meeting adult learners' needs to assist them in pursuing a degree or just taking a course or two."

Zeroing in on our FUTURE

opportunities were expanded to include advanced degree programs through Iowa State University. Today, fifteen engineers are pursuing Master of Science degrees in Mechanical Engineering without having to leave our factory.

Our Clarke College partnership continues to be well received, with over 310 employees enrolled in undergraduate and graduate programs. The Dubuque Works and Clarke College were particularly proud when this program was recognized by Vice-President Al Gore and Secretary of Education Dick Riley in July, and cited as a leading example of educational partnerships which prepare employees to be part of a *future* that is changing rapidly.

The Dubuque Works invested more money in training and education in fiscal '98 than any year in our history. Why? Because reinventing ourselves in the face of ever-changing demands and requirements is critical to our *future*!

Order Fulfillment Process (Estimate-To-Cash)

The Human Resource Department doesn't necessarily pop into the minds of those who think about order fulfillment activities, but in fact, this important initiative presents new challenges to our function. Estimate-to-Cash, the order fulfillment process of the *future*, provides for the manufacture of our products more closely aligned with customer needs. It is also creating new training requirements for our organization. As production schedules have been adjusted, training needs have increased. Employees have been immersed in such diverse areas as "one-up-one-down" training to 401K seminars. Additionally, Continuous Improvement Pay Plans (CIPP) have been adapted to this new order-fulfillment system. The efforts associated with this new order fulfillment system will benefit our factory and division by enhancing product availability and, in turn, market share growth. As a result, every employee should enjoy a brighter *future* as we move into the next millennium.

Employee Survey

As we consider our factory's *future*, sometimes it is appropriate to give thought to where we have come from - in particular the attitudes and opinions of our employees. 1998 marked the second time a systematic corporate wide employee survey was conducted. The results showed improvement in eight of the eleven surveyed topics. I was particularly pleased that our employees viewed our training and development efforts, a key component of our *future*, among the very best in the industry. A second area of focus, communications, showed improvement from our 1996 scores. However, we still lag our objective of being among the best. While we are communicating far better than ever, we aren't good enough. There is no doubt that in the *future*, our employees will continue to see increased focus on communication efforts. This *Year in Review* edition is one such example.

As we reflect on the greatest year in our 51 year history, it is good to pause and appreciate our many accomplishments. These initiatives will provide a strong foundation for an even brighter *future*. We should all be proud and excited to lead the greatest manufacturer of construction equipment - the John Deere Dubuque Works - into the next century!

Coming soon! The Odyssey Backhoe

Following in the footsteps of the extremely successful E-Series backhoe is the Odyssey program. Odyssey is an extension of the E-Series - providing an updated operator station and modern machine styling. This program provides new features for the operator and **keeps backhoe excitement in the marketplace!** The Odyssey backhoes will feature the first completely redesigned cab introduced by the Davenport Cab Factory. Watch for the Odyssey backhoes in FY 2000.

Key Odyssey backhoe changes:

- ✓ Forward tilt hood for improved serviceability
- ✓ Improved forward and rear visibility
- ✓ More overall room
- ✓ Improved lighting
- ✓ Improved HVAC performance
- ✓ Modern styling and ergonomics
- ✓ Digital monitor



2K

John Deere Dubuque and Davenport Works are taking this problem very seriously. Information Systems' Jim Bussan is the Year 2000 Dubuque/Davenport Project Manager. He's been working on this project since August 1996. Many other people at both Dubuque and Davenport are working on this project as well. We have a team of people checking every line of computer code in hundreds of systems, and another team that is doing all of the embedded chip testing.

What is the "Year 2000" problem?

Some of the most important computer software used in government and industry may not work correctly starting in the year 2000 because it can only use single years or decades in sorting data and performing calculations; it will not be able to recognize the change to the new century. This is not just a systems problem, but rather it is a business problem. These problems will affect everyone in the world to some extent.

You may have also heard the term Y2K - this is not R2D2's cousin; it is shorthand for the year 2000 computer problem (K is 1000). Predictions range from the possibility that Y2K will cause some fairly minor but irritating glitches and delays, to the doomsayer certainty that the high-tech world as we know it will end on New Years Day, 1 January 2000. The truth is somewhere in between.

Why is this a problem?

This is a problem for many reasons. When the calendar moves to 2000, will you still receive a pension check? The computer may not think you are old enough and stop sending your pension or social security checks. If you were born in 1900, the computer may consider that you are not even 1 year old. Consider the 104 years young person who received notice that she needed to attend kindergarten in the fall semester. While this is

great for the ego, it is really bad in real life! In short, this is a problem because the computer only has the two-digit year to use in sorting and in calculations.

What is Deere doing about this?

Our company is taking this problem very seriously. Deere & Company has assigned a Year 2000 project manager to work with all of the units and Corporate on this problem. Our corporate goal was to have all mission critical systems and machines Year 2000 compliant by 31 October 1998. This will let us run an entire business year with the changes in place.

Deere and Company has a web site at <http://www.90.deere.com/year2000> that has more detailed information on Year 2000.

The Millennium Bug

What are Dubuque and Davenport doing?

Dubuque Works and Davenport Works are taking this problem very seriously. Information Systems' Jim Bussan is the Year 2000 Dubuque/Davenport Project Manager. He's been working on this project since August 1996. Many other people at both Dubuque and Davenport are working on this project as well. We have a team of people checking every line of computer code in hundreds of systems, and another team that is doing all of the embedded chip testing.

We have developed a comprehensive

Year

nine-point plan to address those items that we felt could cause problems. This plan includes host computer systems, common systems, R & D equipment, embedded chips in factory machines, furnaces, air conditioners, power plant equipment and PC's. This plan was modeled after the plan developed by the Automotive Industry Action Group (AIAG).

Embedded chips are computer chips that are inside machines and control their operation. It is very easy to tell if a computer chip is inside a machine if you have some kind of display device attached to the machine. Not all machines with computer chips have a display device, however, so you may not know you have a problem. These computer chips are found in thousands of devices other than the Personal Computer (or PC as it is commonly called). You will find these chips in many of the machines we use in the factory, such as plasma cutters, robot welders, punches, presses, and forktrucks to name a few. They are in your VCR, television, stereo, kids' games like Nintendo and Sega, and many other devices.

An example of a change that was made are the new employee badges with a red dot. They were necessary because of the new Year 2000 compliant security system.

Watch for more information in the upcoming *Dubuque Year 2000* web page. It will be accessed from our home page.

What about our PC's and desktop software?

All PC's have been inventoried and checked for year 2000 compliance. Those PC's that failed the tests will be replaced during fiscal 1999.

On the desktop, we will be installing Office 97 in December to make the office suite year 2000 compliant. Other software products will also be replaced.

2000

What can I do to help?

There are several things you can do to help.

Look at the software that is loaded on your PC. Is it year 2000 compliant? Does Information Systems know that you have this software? Does it handle dates properly? If not, contact the year 2000 project manager.

Look at any jobs that you run that are not scheduled by Computer Systems. Does the job handle dates properly? If not, contact the Information Systems analyst in your area.

If you or anyone in your area are

buying software, PC's, machines, or machine tools, be sure that the device is year 2000 compliant. It would be good to get this in writing from the supplier. If it is not, don't buy it. The Deere & Company directive is that we will not purchase anything that is not Year 2000 compliant.

You will be contacted via e-mail within the coming months to download software from the intranet that will inventory all software on your desktop and will help you to make your own Excel spreadsheets and Access databases compliant.

Warranty Administration goes worldwide *Electronically!*

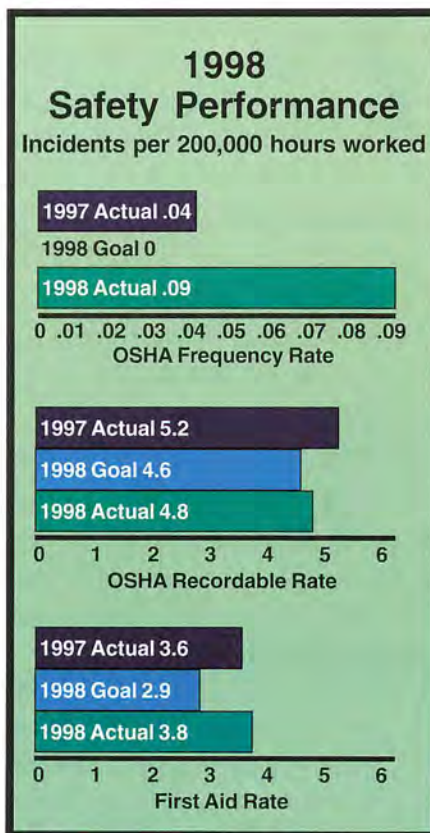
The new Internet-based warranty system, John Deere Warranty Information Network (JDWIN), was introduced to overseas dealers last summer.

To support this new system, Sandy Kaesbauer traveled to Puerto Rico in May to provide much needed training to overseas dealer and field personnel. Overseas dealers who had been submitting paper claims are now able to process claims and delivery receipts electronically! Instead of taking months for this information to reach us, we now receive it the next day. This greatly improves cash flow for the dealer, as well as providing John Deere with timely reliability information.

The Warranty Administration Group

worked this year with JDCEC-Overseas to consolidate warranty processing for the Construction Equipment Division. Effective 1 November 1998, Dubuque Product Support became responsible for processing all warranty, product improvement and parts claims as well as delivery receipt information and SECURE Extended for construction equipment. Currently, Latin America and Australia are processing electronically. Europe and Africa will follow soon.

These changes enhance our ability to accommodate the John Deere global market business in the 21st century.



PATENT STORY/CONTINUED FROM PAGE 34

realize the importance of intellectual property and understand that it is defensible in the marketplace. If we don't protect our ideas, somebody else will grab onto them. Shame on us if we let our ideas become a competitors success!"



Ron Brass, Specialist, Product Safety and Technical Engineering (center) presented George Kalhorn (left) and Arvid Saele their U.S. Patent Number 5,682,958 plaques for "rear wheel assist for a self-propelled scraper" in May. The patent was also awarded to Vermeer's Larry DeVore and Duane Harthoorn.

In 1996 and 1997, Dubuque Product Support was instrumental in developing **Total Repair Cost Management.**

TRCM is a comprehensive support program developed to assist customers in managing and maintaining their Deere and non-Deere construction equipment. It's part of our efforts to become more *customer focused* and to grow. Essentially, TRCM is a line-up of support initiatives and services to control customer operating costs, increase profits, and reduce the stress of owning and operating equipment. It's part of Deere's proactive, fix-before-fail strategy that provides customers the tools to avoid downtime and protect their cash flow.

Certified Customer Support Advisors (CSA's) are the heart of TRCM. They go through hours of intensive training on TRCM tools and training to develop the skills to analyze a customer's business and apply the concepts. They become a trusted consultant to the customer. Their mission is to take the burden of machine maintenance off the customer's shoulders and give them more time to concentrate on increasing profits.

In 1999, with a full compliment of certified CSA's, we expect sales in all areas of TRCM to continue the sharp upward trend.

"Race for the Customer"

Key TRCM ingredients:

- Secure Extended Warranty
- Preventive Maintenance Contracts
- CounterParts
- Product Life-Cycle Data
- OilScan Plus
- RemanSelect

Secure Extended Warranty

An additional factory warranty available for purchase by the customer. It covers machine repair costs for a variety of time spans up to 10,000 hours. We've gone from 35% of our new machines covered by Secure Extended in 1997 to 61% coverage in 1998. Total hours of Secure Extended Warranty coverage surpassed 41 million in 1998.

Preventive Maintenance Contracts

These contracts ensure that critical maintenance work gets done right and on schedule. Contracts are crafted to meet customer needs. Time of coverage, extent of services provided, hazardous waste disposal, and work performed during off-shift hours offer the flexibility required by many customers. We've sold 4,857 PM contracts in 1998 compared to 1,965 contracts in 1997!



CounterParts

A new industry standard for service parts

COUNTERPARTS

availability. For select parts, we promise that if a dealer doesn't have them in stock when the customer orders, the parts will be there the next day and will be free!

Product Life-Cycle Data

An important component of TRCM because it provides invaluable information on the predicted life span of major components. This data is used to head off catastrophic failures and unexpected downtime by replacing components before their life is used up.

OilScan Plus

A fluid analysis program that tells the customer what's going on inside all of his machine's major components. It measures wear metals in parts per million or does particle counts to tell how clean a system is. This data can be used to detect impending failures or to schedule maintenance. Our customers find it much less expensive to avoid catastrophic failures. OilScan Plus does just that. OilScan Plus samples taken in 1998 are expected to exceed 31,715 compared to 9,150 in 1997!



RemanSelect

Our remanufactured products program. Components are remanufactured with genuine parts, to new component specifications, final tested and backed with a one year or 1,500 hour warranty. The best part is that they're available at about 65% of the cost of a new component, providing the low cost alternative demanded by our customers today. RemanSelect sales for 1998 are at \$10 million compared to \$6 million in 1997.

Three ways we deliver information using emerging technology

Product Support is migrating applications to the Internet.

1 This year, our dealers received two additional Internet applications: "SECURE Extended Prices" and "Quote" to make it easier to sell SECURE Extended to our customers.

2 Our Customer Support Library is the method we will use to deliver all of our service marketing manuals, bulletins and newsletters. In 1998, we added the following programs which are now available via the Internet:

- ✓ Total Repair Cost Management
- ✓ OilscanPlus
- ✓ Preventive Maintenance
- ✓ RemanSelect
- ✓ SECURE Extended
- ✓ Engine Repower Guidelines

3 This year's major Internet project has been the development of a new Dealer Technical Assistance Center (DTAC) system which will be available to our DTAC specialists and dealers in early fiscal 1999. The new system will allow dealers to open and view DTAC, DPAC, and DMAC cases and solutions via the Internet, as well as interface to our new ServiceEXPERT system. This will be a major step to delivering real time technical help to our customers.

DTAC - Dealer **Technical** Assistance Center
DPAC - Dealer **Parts** Assistance Center
DMAC - Dealer **Marketing** Assistance Center

ServiceEXPERT

A John Deere dealership service tool capable of providing technical and machine support for technicians and service managers located at dealerships, as well as, field technicians located at a customer site.

"Provide accurate, real time Technical Support and Service Information Solutions for seamless support to each customer every time."

Technical Support Operations Mission Statement

employees focused on providing seamless customer and production support achieved delighted customers, unmatched production schedules and record profits. But we needed to expand this success!!

Because of the uniqueness of purchased products, a Purchased Product Business Unit was established with both Model and Module activities in one group. The group was responsible for 25 current models with over 5000 machines in 1998. Significantly more models will be added in 1999.

This team includes employees in Engineering, Product Support, Reliability, Order Fulfillment, Specifications and Parts Catalogs. Their sole purpose

Excellent customer support with a focus going beyond the bounds of our factories

To achieve "seamless support," our Backhoe and Crawler DTAC groups relocated to the Backhoe and Crawler Modules during the summer of 1996. Having a team of

is to develop, adopt, and support products that are not designed or built in our Dubuque or Davenport Factories.

Product Support and Reliability personnel moved to the Purchased Product Engineering area and completed the team during June 1998. This team not only provided seamless support to our customers and dealers during a recent problem with our "G" series rubber tired Feller Bunchers from Cameco, but also worked as a team to understand the issues, "blue-sky" potential fixes and drive the final resolution to production, and most importantly to our customers. This teamwork provided seamless support to each customer every time.

Product Modules were also set up in our Davenport factory for 4WD Loaders and Motor Graders / Skidders this past summer. Staffing and facilities have recently been completed and these Modules are "off and running" to provide "seamless support." The teamwork of our Purchased Product Business Unit along with the teamwork of our Product Models and Modules will fulfill our Division's Strategic Intent to "Become a 1st tier supplier, delivering globally the world's finest solutions and value in equipment, service, and support - on time, every time."

When need a part, you want it now!

Have you ever tried to get parts for your Oldsmobile when it has broken down in Timbuktu?

Assuming you could find a dealership or mechanic, you would probably be informed that it would take two to four weeks to get parts. Unfortunately, this has happened in the past for some construction machines in certain parts of the world.

In order to be more proactive, several projects are underway to alleviate this problem. One of these new projects involves engine components (injection pumps, starters, and turbochargers).

Each month, machine sales will be compiled and the engine component part number and the component supplier will be determined. An analysis will then be done, region by region, to determine if the quantity of machines operating in a region of the world, justifies stocking selected parts at the closest parts depot or dealer. This will reduce the downtime of machines. Customers in today's global economy will accept nothing less!

A dealer service technician information highway



Our vision of dealership service capability is nearing reality. With the introduction of ServiceEXPERT, our dealer technicians will have the capability to interface with machine on-board controllers, and the wide variety of technical information provided on CDROM's or accessed from their Dealer Business System or Deere host System. This information highway was designed to increase technician efficiency, raise their skill level and enhance customer service.

ServiceEXPERT is a John Deere dealership service tool capable of providing technical and machine support for technicians and service managers at dealerships as well as field technicians located at a customer site. The application is currently undergoing acceptance testing and certification. The heart of

the system is the expert diagnostic system that allows technicians to enter a service code or observable symptom. ServiceEXPERT will then identify suspected parts or problems and display a list of recommended test procedures.

When the user selects a recommended test procedure, they are automatically linked to electronic technical manual procedures. The system tracks the user's actions and continues to suggest recommended procedures. The Diagnostic Knowledge Base is the heart of this application. Diagnostic authoring begins with a well defined Knowledge Acquisition Process. In 1999, we will integrate this sub-process into the Produce Delivery Process (PDP). Formation of a troubleshooting strategy team early in Model PDP allows definition of the knowledge base scope and service strategies before authoring starts. This team of functional experts collaborate to define the diagnostic

process. A validation team induces or installs failures in machines and then complete ServiceEXPERT defined diagnostic routines to test the integrity of the knowledge base. Field feedback as well as Dealer Technical Assistance Center (DTAC) solution maintenance will continue to improve the knowledge base. Dealer information updates will occur daily.

We have involved end users throughout the analysis phase as well as design reviews and pilot. Our ability to deliver our best diagnostic and service information will increase technician's service quality to correctly diagnose and repair.

Training is occurring for DTAC and field service personnel through January 1999. A computer based training CDROM is being developed for dealership technician basic training. Dealer deployment begins in February 1999 and is planned to be complete by 31 October 1999.

The Construction Equipment Division's Dealer Marketing Assistance Center (DMAC) opened for business on 3 November 1997. It is an extension of the Custom Engineering and Attachments Group (CEAG) in Dubuque. The mission of the DMAC center is to provide one source to Deere's construction equipment dealers for assistance with all product design, feature, and application related questions. Dealers can call DMAC from 7:00 AM to 5:00 PM every business day. The center is staffed by four full-time DMAC Specialists, supported by seven CEAG personnel.

In the first 11 months of operation, over 11,500 calls were received. At the same time, an intranet database of nearly 8,500 solutions has been created. When a dealer call is received, the DMAC

Answers to questions about product design, features or applications are just one call away with **DMAC!**

Specialist first searches the database for the answer to the dealer's question. If the answer is not in the database, the DMAC Specialist will start a process designed to provide a quick response, using the many Product Planning, Engineering and Technical resources that are available for the entire product line. When a new solution is developed, it is added to the database.

The types of calls received by DMAC are of a wide variety, but with a primary focus on product specifications, machine application and performance,

component commonality and interchangeability, special machine configurations for special customer applications, and information on competitive equipment. "The positive feedback from dealers has been exciting," says Mike McClain, Supervisor of the DMAC center. "They tell us that this service has enhanced their ability to partner with our customers and find the right solutions to customer needs."

Beginning in 1999, Construction Equipment dealers will be able to access the DMAC solution database directly from their locations through a secured site on the Internet. In addition, they will be able to use this same Internet site as a means of two-way communication with the DMAC center. This service enhancement will enable dealers to search for solutions or make inquiries 24 hours a day, 7 days a week.

UAW Local 94 celebrates 50 years!



UAW Local 94 celebrated its 50th Anniversary with an open house on April 25, 1998. The celebration brought together many special people from the past and present. The day included fun, food and prizes. Leading the list of many prizes was a John Deere riding lawn mower, donated by John Deere Dubuque Works.

The fifty year journey of Local 94 started with production work at the Dubuque Works in 1946. By the end of the year there were approximately 800 wage and salaried employees on the payroll.

The first contract

took effect on June 23, 1947.

The first recorded Local 94 membership

meeting was held on July 21, 1948. In

January 1952 the number of bargaining unit employees reached

1,323. By August 1958 the number climbed to 1,972, the highest number to date.

In January 1962 the union had 3,100 members. The average yearly wage for hourly workers was \$2,884.00. Incentive workers averaged \$3,380.00. Ten years later, 4,579 members were in the bargaining unit at an average hourly rate of \$4.86 and incentive rate of \$5.61.

Some of the first occupation rates

- Cupola operator \$1.38
- Tool grinder \$1.21
- Line fill \$1.15
- Electrician \$1.56
- Janitor \$1.09
- Assemblers \$1.25

In January 1974, presidency of Local 94 was made a full time position. Bargaining unit membership was at 5,069. The union had gone from 3,000 to almost 6,000 members in five years!

By 1978 5,590 people were working in the bargaining unit at the Dubuque Works and 27,119 UAW members were working throughout the Deere chain. In April 1980 bargaining unit employment reached an all time high of 6,217 at Dubuque.

In 1980, the economy took a downturn and by December, bargaining unit employment was down to 4,193. More economic hardship came in 1982 and employment dropped to 2,112.

Between 1983 and 1990 employment was in the 2,100 to 3,000 range. Bargaining unit employment was 1,384 at the end of fiscal 1998.

Local 94 Presidents

ARNOLD HACKMAN - 1948
LLOYD FERRIS - 1949
VINCE JESTICE - 1950 - 1953
GERRY GREW - 1953 - 1959
FRANCIS WHITE - 1959 - 1961
TOM McCLAIN - 1961 - 1963
MIKE KLEIN - 1963 - 1965
RAY SHORT - 1965 - 1967
TOM McCLAIN - 1967 - 1969
RAY SHORT - 1969 - 1971
PAT DILLON - 1971 - 1993
TERRY GARTNER - 1993 - PRESENT

Information from
"The Spirit and Times of Local 94 UAW"

Mustang Spirit

A sculpture to honor two longtime school administrators. It was fabricated at John Deere Dubuque Works.

O

n May 20, retiring Hempstead High School principal Don Moody and assistant principal Bill Peck received an exciting surprise. Faculty and students presented them with a steel sculpture of four mustangs.

English teacher Ken Resch had the inspiration for the sculpture which is based on the school mascot, the mustang. Knowing that Hempstead senior Val Barbaro was skillful in drawing, he asked if she'd be interested in working on the project. The final product is based on her design.

Hempstead students raised money for materials and the idea became a reality with the help of John Deere Dubuque Works. The sculpture was cut and assembled at the factory. Throughout the project, students and faculty went to great lengths to keep the sculpture a secret from Moody and Peck. Their efforts were successful and *Mustang Spirit* is now permanently mounted in the school courtyard.



Rich Courtade (right) replicated Val Barbaro's hand drawing using a CAD (Computer Aided Design) system. It took about eight hours to input the geometry and create the program to run the laser cutting machine.

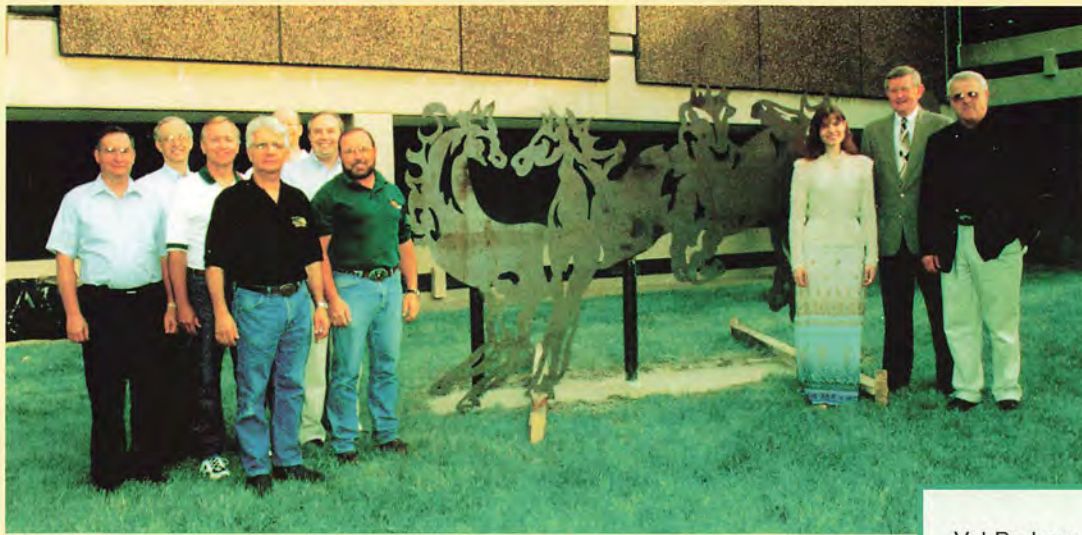
Colby Bowers and Rich are shown checking the sculpture after laser cutting was completed. They were particularly impressed with the detail. When the sculpture was removed from the cutting bed, special supports were used to keep it from bending.



Val Barbaro and Dave Knaeble watch as Dave's laser cutting machine cuts the sculpture out of a six foot by twelve foot sheet of Cor-Ten steel. It took the laser cutter about an hour and ten minutes to complete cutting the 3/8 inch thick material.

Jim Ehlinger used four-inch diameter tubing to construct the frame and mounts. "I needed to make the frame sturdy, but I didn't want it to detract from the sculpture," said Jim. "So I welded extension elbows to allow the sculpture to extend out from the frame. The frame also had to be constructed to accommodate the sloping ground on the site where it was installed."





Representing John Deere on dedication day were (left of sculpture) Colby Bowers, Boyd Nichols, Dave Knaeble, Jim Ehlinger, Richard Courtade, Dennis Kremer and Teddy Olson. On the right are Val Barbaro, Don Moody and Bill Peck.



Steel used for sculpture has unique rusting characteristic

After just a few weeks, a thin layer of rust covered *Mustang Spirit*. But that was meant to happen. The Cor-Ten steel that it was constructed out of is designed to rust to a certain depth and then seal itself from further rusting. Cor-Ten steel is the same material that was used to construct the Deere & Company Administrative Center (above) in Moline, Illinois. Thus the nickname "Rusty Palace" for the Deere headquarters.



Val Barbaro, was a Hempstead senior when she designed *Mustang Spirit* last spring. "My English teacher, Mr.



Resch, saw my art work and asked if I'd be interested in this project. He envisioned four horses that were connected and said I could run with the design from there."

Val researched horses to get a feel for muscle structure and proportion, then drew several sketches. "I drew about ten drawings that included three to five major changes," said Val. "Then Rich Courtade took my drawing and made a computer replica. His computer version doesn't differ at all from my original drawing. I'm proud to have been part of this project, and happy that John Deere was able to help. The sculpture will be there for a long, long time."

Val's father, Tony Barbaro, was a mechanical engineer at John Deere Dubuque Works. He passed away in 1987 when Val was seven years old. Currently, Val is studying art at the University of Minnesota.

The Year

November

- Dealer Marketing Assistance Center (DMAC) opens.
- JD Crop (John Deere Cost Reduction Opportunities Process) implemented in Construction Equipment Division (CED).

December

- Deere & Company reports record 1997 results.
- Safety, quality and profit pork chop dinner celebration held.

January

- Wage Certification Training Program introduced.
- First group of River City Rallye visitors arrive.
- *Construction Equipment* magazine included three pieces of John Deere construction equipment among its annual listing of the 100 most significant new products of 1997:
 - ✓ E-Series Backhoe Loaders
 - ✓ H-Series Wheel Loader Line
 - ✓ Powerwise Excavator Line
- Distribution of corporate employee survey began.
- 410E Loader Backhoe was selected as one of 52 recipients of the 1997 Johnson Hill Press OEMie Award. The OEMie Award program recognizes Modern Innovations in Engineering. They are presented by *OEM Off-Highway, Equipment Today, Farm Equipment, Yard & Garden, PRO, Rental Product News and Pavement Maintenance & Reconstruction* for outstanding innovations and products in the off-highway, construction, agriculture and outdoor power markets.

February

- John Deere Dubuque Works provides 150 Dubuque Fighting Saints tickets for "Youth Night" held in conjunction with Big Brothers/Big Sisters.
- Deere & Company posts record first quarter net earnings.
- Business Process Excellence (BPE) introduced at Dubuque Works.

March

- Deere & Company and UAW International Union officials visit Dubuque Works to review the very successful Wage Certification Training Program.
- Dubuque Works passes annual ISO9001 Registration Audit.
- River City Rallye, the third dealer/customer Fly-In concludes.
- John Deere Dubuque Works offers two \$2,500 scholarships for students interested in pursuing a technical career in welding. The scholarships are available at Northeast Iowa Community College and Southwest Wisconsin Technical College.

April

- Deere & Company annual inventory audit held.
- Demolition of I-Building began.
- 48 Achieving Excellence PARTNER suppliers were honored at a banquet in Davenport. Only 9% of the suppliers from the Agricultural, Deere Power Systems Group and Construction Equipment Divisions participating in the Achieving Excellence process achieve PARTNER status.

at a *Glance*

May

- The Quality Council and representatives from critical process areas met and used the Malcolm Baldrige Self Assessment and Malcolm Baldrige Criteria for Performance Excellence to measure how the Dubuque Works is doing in relation to the best companies in the world.
- Annual Service Award Banquet honors 797 employees. There were 688 25 year veterans!
- Governor Terry Branstad presented the Iowa-Illinois Safety Council Award to employees of John Deere Dubuque Works. The award was presented for outstanding achievement in accident prevention during the 1997 calendar year.
- *Mustang Spirit*, a sculpture fabricated at John Deere Dubuque Works unveiled at Hempstead High School.
- Deere & Company posted record second quarter net earnings.

June

- Deere Power Systems Group celebrated production of its four millionth diesel engine.
- Deere & Company Employee Survey results communicated to employees.
- John Deere Dubuque Works selected as one of six Deere facilities to receive a 1998 Environmental Achievement Award from Deere & Company. The award was for environmental excellence resulting from an accounting process that was developed to track environmental costs.

July

- Max Guinn, John Deere Dubuque Works General Manager and Terry Gartner, UAW Local 94 President cut the ribbon at a special ceremony to officially open the new Fitness Center.
- The John Deere Foundation on behalf of the Worldwide Construction Equipment Division provided a \$250,000 grant for a controls lab to the University of Wisconsin-Platteville.

August

- Three-phase renovation of Occupational Health Services began.
- Corporate effort between the Construction, Agricultural, and Commercial & Consumer Equipment Divisions created a new John Deere Standard Supplier Quality Manual. The manual was sent to 1,200 John Deere production suppliers.
- Deere & Company posted record third quarter net earnings.

September
October

- Internal launch for H-Series Crawlers held for senior Deere & Company management, crawler personnel and suppliers.
- Pork chop luncheon celebrates safety, quality and profit performance.
- Backhoe Division snatched the traveling trophy in the fourth annual Backhoe, Crawler & Engine Division Golf Challenge.
- Hiring process for new hires in fiscal 1999 began.

Chad Little and his John Deere Motorsports

team finished an impressive 15th in the 1998 NASCAR Winston Cup points standings.

Following the season's final race, the Napa 500, Little said, "It's

been a long day and a long season, but we finally reached our goal. This team decided in February that it would finish in the top 15 in points and that's exactly what we did.

"We've come such a long way in one year's time, it's hard to believe we were a 37th-place team at this time last year. I'm proud of every guy on this team and I can't wait to see how much further we can go next season. Jack Roush believed in us and John Deere stood behind us when things were tough. It feels good to be able to give them this season in return for that support.

"Next season is right around the corner and we're already working on our cars. Our guys don't stop just because the season has ended. With the momentum we've built up, we'll all be recharged when the Daytona 500 rolls around in February and we'll be ready to surpass all the success we've had this year. I can't wait and I know the guys can't either. We've got a lot to look forward to."



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When you're at the Michigan Speedway to watch the Miller Lite 400, you expect to see Chad Little and his John Deere #97 Ford Taurus.

What Tom McLimans, a Department 113 machine operator saw last June, was a bit different. It was a John Deere 310SE Backhoe decked out in racing decals! "It made me feel proud to be that far from home and see something I helped produce," said Tom.

David Althaus, Division Manager, Service Marketing in Moline, Illinois arranged to have the backhoe at the race. "It only cost about \$300.00 for the make-over. We applied racing stripes, had the wheel rims painted green and added number 97 to the bucket," said Althaus. "It was really a

crowd pleaser and great draw.

Dealers from Michigan and surrounding states had eighty customers in before the race to look at the backhoe."



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